

the team to trust ■ ■ ■

user manual ■ ■ ■



9040

9040_s

9040 IP65

9040 Contrast



A36951-C

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Général







■ Introduction

Thank you for choosing an Markem-Imaje product to handle your marking and coding requirements.

This printer is highly adaptable and can be used in a wide variety of applications. With an optimized design, outstanding stopping and starting performance and simple maintenance, this printer is easy to set up, easy to use and easy to service.

■ Latest information

The information contained in this document may not be considered to be contractually binding. Markem-Imaje reserves the right to change the characteristics indicated in the text and illustrations contained in this document without notice. The content of this document may not be reproduced, as a whole or in part, without the permission of Markem-Imaje.

■ Using this manual

The following example illustrates the method used to represent the path used to access a particular function or command via the menu structure:

To access the **Message selection** function:

■ From the Production menu

► *Message/Message selection*

■ From the icon taskbar

 (Direct access: press the  key to activate the icon)

■ Contact us

Contact your nearest Markem-Imaje representative to discuss your requirements.

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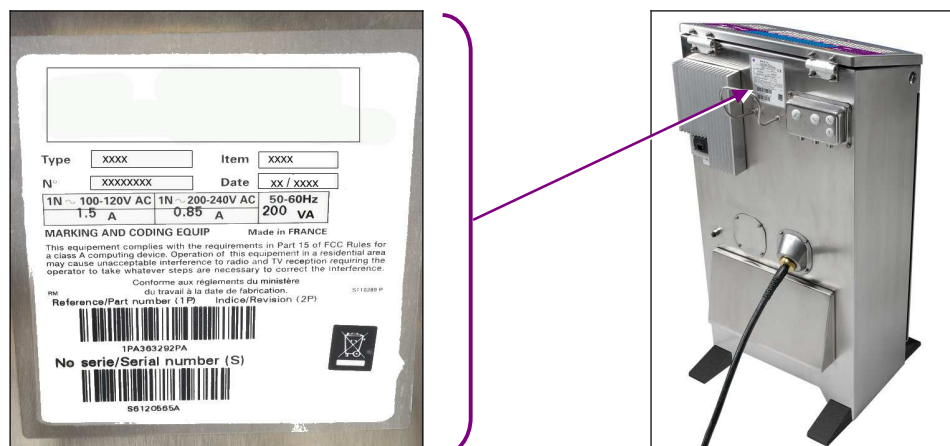




General

■ Certification and standards

Refer to the identification plate on your machine and the certificate of conformity supplied with the printer. The ID plate shown below is given as an example and does not relate to any particular machine.



We are constantly seeking to improve quality in our effort to satisfy your requirements. The fact that the quality management systems at our industrial sites and the majority of our commercial subsidiaries are ISO 9001:2000 certified clearly demonstrates this commitment.

We care for the environment and were the first company in the industry to be awarded ISO 14001 certification. A total of three sites are ISO 14001 certified: Bourg-lès-Valence, Gothenburg and Shanghai.

The design and
manufacturing plants of
this product are

**ISO 9001 / ISO 14001
CERTIFIED**





■ Preliminary instructions / Security

Before starting work, please read these instructions and the materials safety data sheet (MSDS) for the consumables used.

en

Disconnect the printer from the electrical source before opening it or changing any of its components.

Liability

Markem-Imaje shall not be held responsible if the safety instructions are not followed, nor more generally if elementary safety rules are not applied when using and servicing Markem-Imaje equipment.

This equipment is certified to comply with the department of labour regulations in force on the date of manufacture.

Any consequences of modifications or repairs shall be the sole responsibility of the person carrying them out.

The same applies to use not complying with Markem-Imaje specifications.

All Markem-Imaje printers have safety labels that meet the safety standards governing printer use compliant with Markem-Imaje recommendations.

Any modification carried out may be counter to printer compliance and the relevant safety standards.

Therefore, Markem-Imaje cannot be held liable for any malfunction or damage caused by any modification of the use recommended by Markem-Imaje or for any incident arising from use of the printer for any purposes other than those for which it is designed. It is the sole responsibility of the user to take the precautions required by any use to which he or she puts the printer.

Health / Hygiene

Please read the safety data sheet (MSDS) for the consumables used.

For certain consumables:

- ☐ Wearing contact lenses when handling these consumables is strictly prohibited.
- ☐ Ink-resistant gloves and safety goggles are recommended during filling and cleaning operations.

Max. noise level < 60 dB A.

Fire prevention

It is essential to comply with the instructions on the safety data sheet (MSDS) for the consumables used.

CAUTION: For continued protection against possible fire, use only the ink/solvent mixtures specified by Markem-Imaje.

If your printer uses flammable ink or make-up:

- ☐ Never leave containers containing ink, make-up or cleaning products, or ink-soaked rags (even dry) near the printer.
- ☐ Install a foam, CO2 or powder extinguisher immediately adjacent to the printer (maximum 10 meters).
- ☐ Never smoke near the printer. Affix a sign "NO SMOKING, FLAMMABLE INK" near the printer.
- ☐ Ensure that the printer is kept particularly clean, as dried ink deposits remain highly flammable.
- ☐ Drums of ink, make-up and cleaning solution must be closed and stored in a ventilated room.





General

Environment

Operating temperature: On S7, S8 and 9040 lines: +5°C to +45°C (+41°F to +113°F)
On 9020-9030 printers: +5°C to +40°C (+41°F to +104°F).

Humidity: 0 - 90% RH with no condensation. The use of certain inks may limit the temperature and humidity ranges (see the ink specification sheet).

The printer must not be used in explosive atmospheres.

Installation

The printer and print head must be attached using appropriate mounting devices to ensure that they are perfectly stable.

9040: The printer must be attached to the floor using the designated mechanism provided (4 bolts, minimum diameter 6 mm, with washers, class 5.6 minimum, minimum pull-out resistance 300 daN). Nevertheless, if it is not possible to attach the printer to the floor, the Markem-Imaje stability kit must be installed on the printer. The print heads must be attached using appropriate mounting devices to ensure that they are perfectly stable.

The printer must be installed in a ventilated location, away from any source of heat, flames or sparks.

The printer and the print heads must be secured firmly in place with fastening devices.

The printer installation on the production line must not generate any risks for staff.

The operator's work station faces the printer.

The printer must be connected to a single phase mains electricity network with earth ground, using the cable supplied with the printer. The standard plug on this cable must be easily accessible.

The electrical and pneumatic installations upline of the printer must comply with applicable regulations. Machine electrical specifications: refer to the specification plate located near the power receptacle (S7, S8 and 9040 lines) or inside the door near the consumables (9020-9030 printers).

When the printer or a part thereof is attached to a stand, the stand must be connected to earth ground.

Earth ground all conducting parts not at a voltage reference and which are related to or close to the printer (metal frames, protective guards, etc.).

For information on fastening an Markem-Imaje accessory, refer to the assembly instructions delivered with it.

Use

The printer is designed for contact-free printing by projecting ink. Any other use of the printer is prohibited, and any consequences shall be under the entire responsibility of the user.

Consumables (inks, make-up, cleaning products, servicing products) not produced by Markem-Imaje must not be used, and any consequences shall be under the entire responsibility of the user.

Other types of Markem-Imaje consumables should not be used without Markem-Imaje's prior approval, and any consequences shall be under the entire responsibility of the user.

Handling

When the printer contains consumables, it should not be tilted and should only be moved vertically. Totally drain the printer before moving it to a non-vertical position.

Servicing

Disconnect the printer from the mains before any operations requiring components to be removed or exchanged. Use appropriate tools for any work on the electrical and hydraulic circuits.

After each maintenance operation, the waste receptacles used should be emptied and cleaned. Do not leave rags soaked with consumables near the printer.

We recommend that repairs be carried out only by staff who have received technical training from Markem-Imaje.





■ Recycling



The equipment described below is industrial equipment, and therefore cannot be recycled or recovered as household waste but must be processed using special methods, as shown by the symbol below.

The following table indicates some of the methods available for recycling machines when they reach the end of their life cycle. These methods are shown for guidance purposes only. Other more specialized processes may be used instead of those indicated.

Please do not hesitate to contact your Markem-Imaje representative for further information.

Accumulators and batteries used in the equipment must be treated using specialized methods.

If the equipment is not dismantled on site, the following information must be forwarded to the service-provider responsible for this operation.

	Recycled parts	Method
1	Stainless steel cabinet.	Material 100% recyclable using any metal processing method.
2	Containers for consumables and ink circuits.	These items consist of plastic, metal and composite materials which are impregnated with or contain ink. Recommended method: ☐ energy recovery.
3	Umbilical and printhead.	☐ energy recovery, ☐ recovery of electrical material, ☐ recovery of metals. CAUTION : Electronic circuit board present (see 4).
4	Electronic circuit boards, screen and electrical wiring.	Recommended method: ☐ Recovery and treatment of electronic waste (computers, televisions, etc.).







Description of the printer



Description of the printer

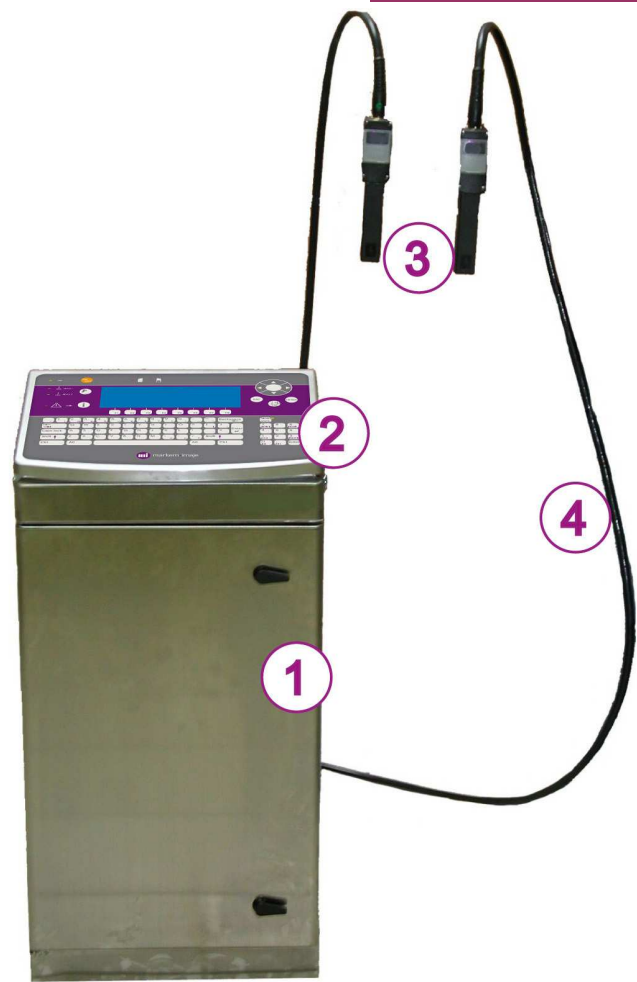
Description of the printer



■ Overall view

The 9040 printer is produced in four models.

Model	Number of heads	Number of jets	Type of head
9040	1 or 2	1 or 2	G head – M head - P head
9040 IP65	1 or 2	1 or 2	G head - M head
9040 Contrast	1	1 or 2	G head - M head
9040 S	1	2	S head



1	Cabinet
2	Operator interface
3	Print heads
4	Umbilical conduit



Description of the printer

■ Electronics compartment



1	PC board
2	Power supply board
3	Industrial interface board
4	Main board





Description of the printer

■ Hydraulic compartment



- | | |
|---|--|
| 1 | Ink circuit |
| 2 | Head pressurization unit
(9040 – 9040 IP65) |





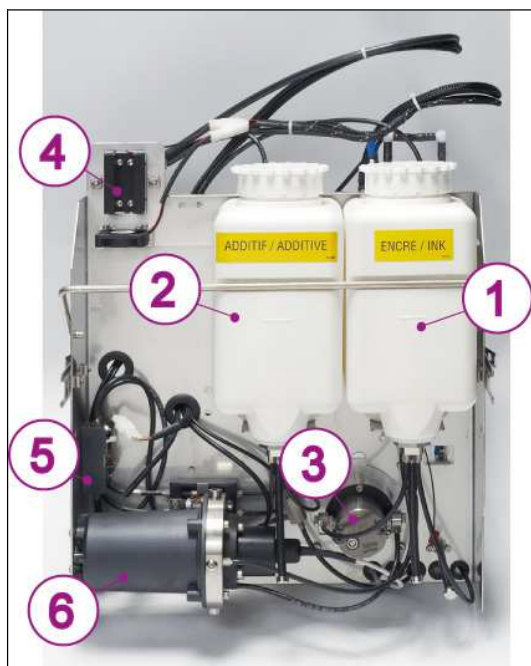
Description of the printer

Ink circuit

9040

- 9040 IP65

- 9040_S

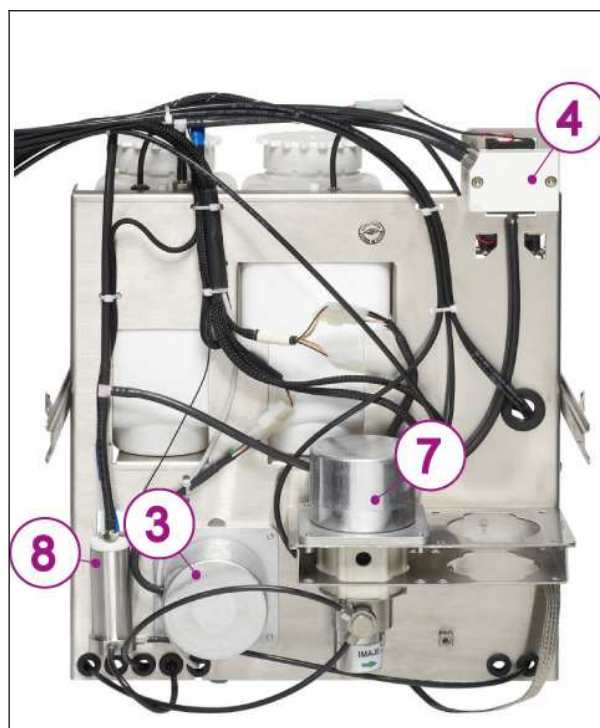


- | | |
|---|--------------------|
| 1 | Ink tank |
| 2 | Additive tank |
| 3 | Pressure pump unit |
| 4 | Condenser |
| 5 | Electrovalve(s) |
| 6 | Ink filter |

Front view

- | | |
|---|------------------|
| 7 | Vacuum pump unit |
| 8 | Viscometer |

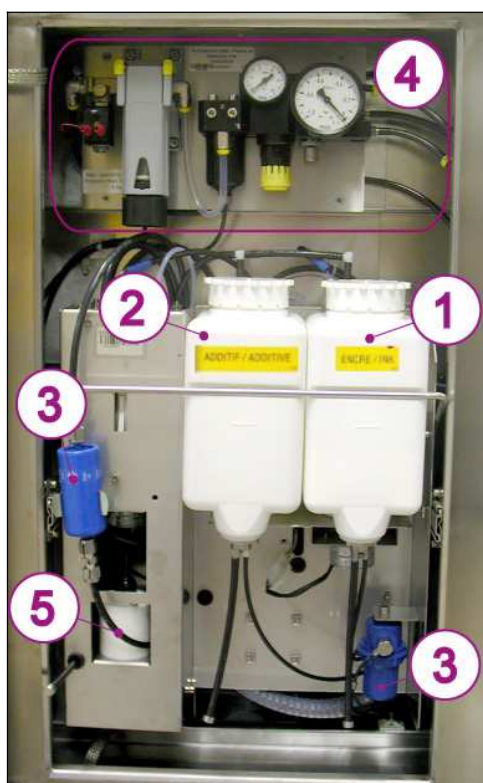
Rear view





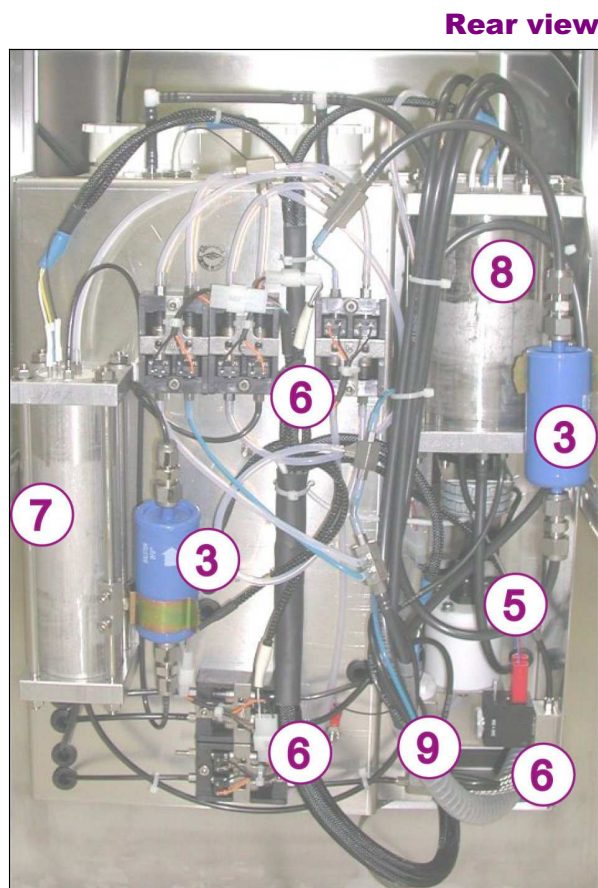
Description of the printer

Ink circuit 9040 Contrast



Front view

1	Ink tank
2	Additive tank
3	Coalescence filter(s)
4	Air supply connection
5	Pressure sensor
6	Electrovalve(s)
7	Accumulator
8	Recovery tank
9	Viscometer



Rear view





Description of the printer

■ Rear view

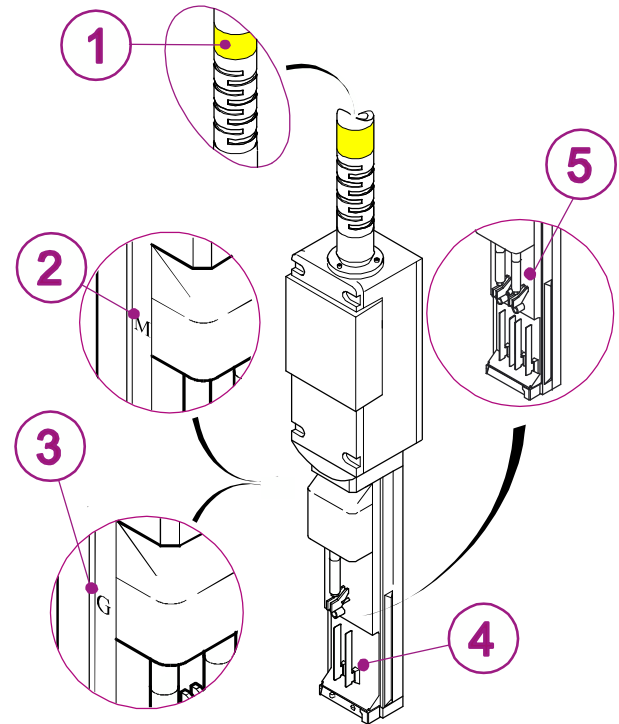
1	Mains power lead
2	Connection interface
3	Umbilical conduit to print module





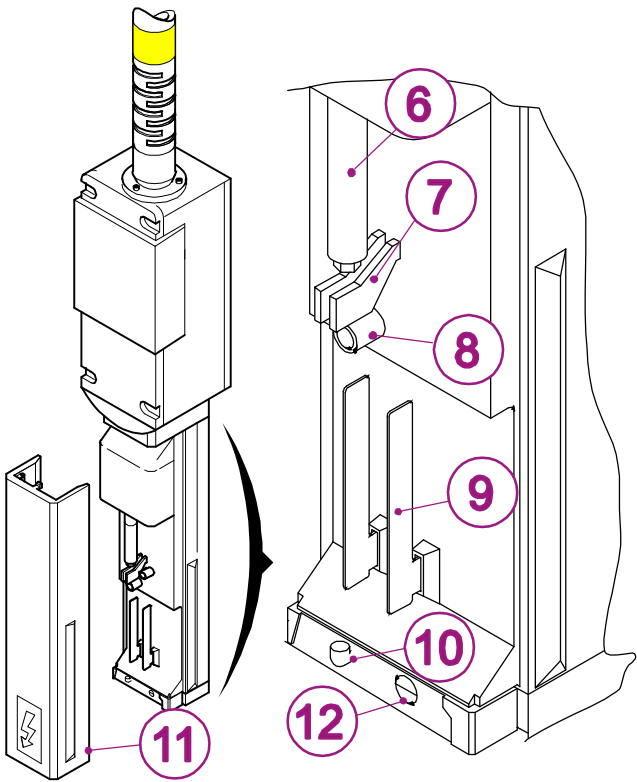
Description of the printer

■ Printheads



1	P head ID (small)
2	M head ID (medium)
3	G head ID (large)
4	Single-jet
5	Twin-jet

6	Cannon
7	Charge electrode
8	Detection electrode
9	Deflector plates
10	Recovery gutter
11	Head cover
12	Gutter plug







Description of operator interface





Description of operator interface



Description of operator interface



■ Description



Areas

1	Operation
2	Screen
3	Navigation
4	Editing



Description of operator interface

Operation area

Printer power on indicator.



On / Off

Head status indicators.
on: ready to print.
flashing: fault.
off: printer shut down.



View printer parameters
and access jet
maintenance functions.

Fault and alarm detection
indicator.



View and clear detected
faults and alarms.

Fluid Low level indicators

Additive



Ink

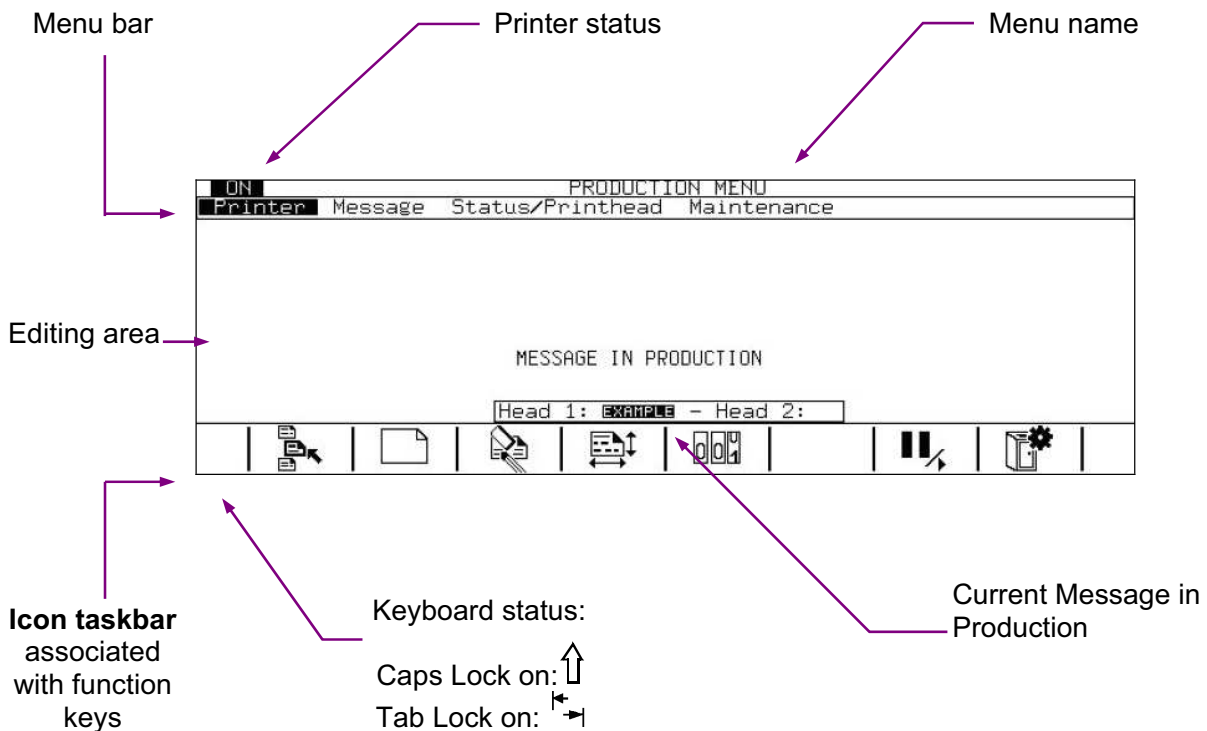




Description of operator interface

Screen

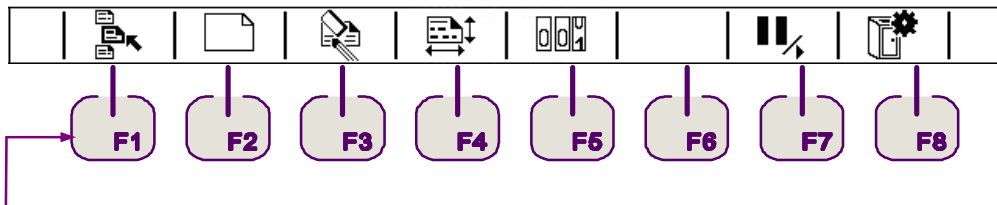
A wide screen liquid crystal display for displaying messages in WYSIWYG (what you see is what you get) format.





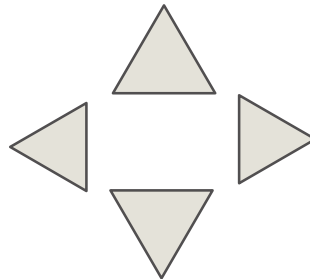
Description of operator interface

Navigation area



Function keys F1 to F8 are associated with the Icon taskbar and provide direct access to the main functions required for every day use.

Arrow keys: For moving within menus or inside the edited message.



To abort an action or access **Message Editing** menu bar.



To confirm an action or selection.



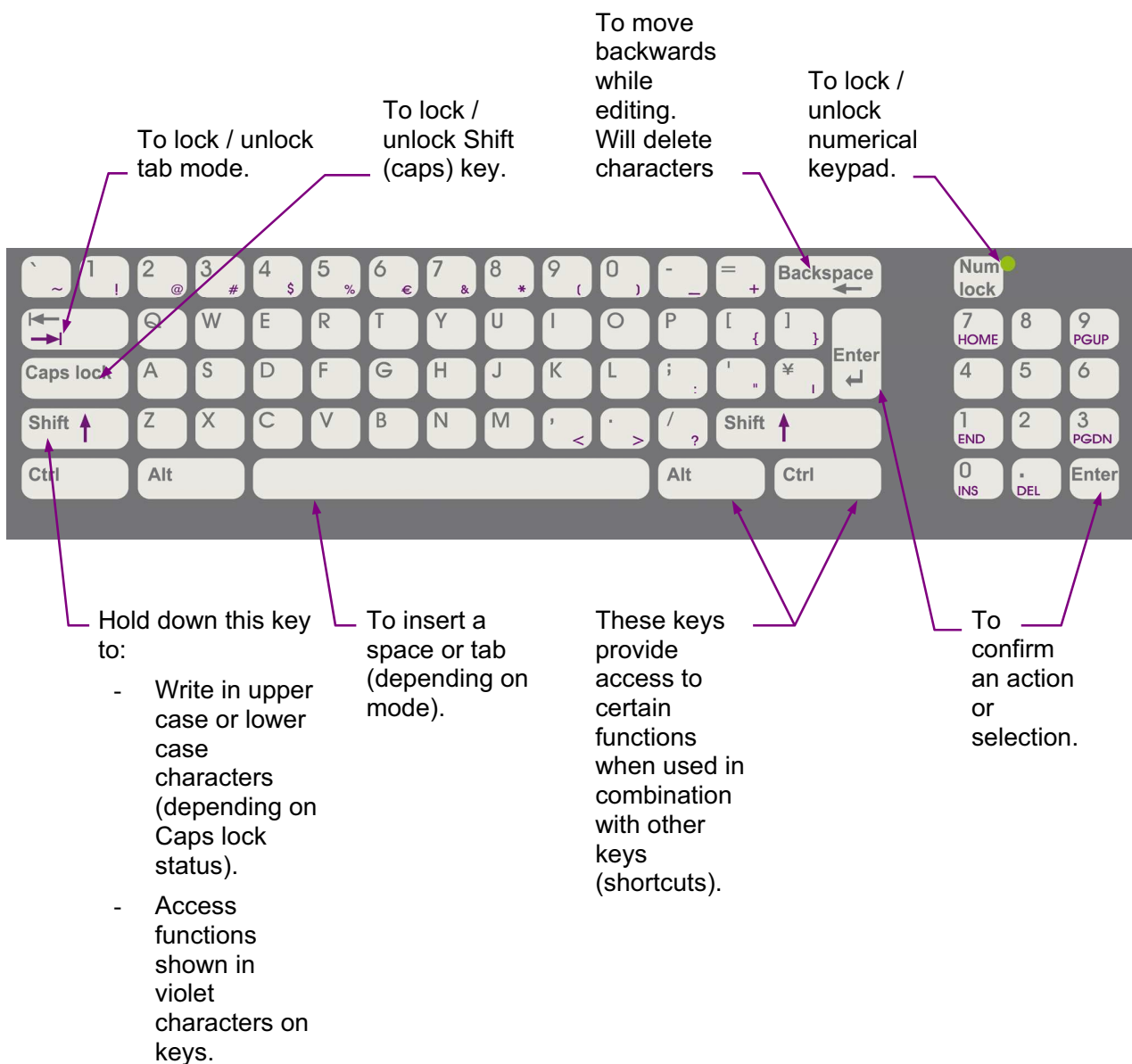
- To open a selection box.
- To enter a data input box.
- To check/uncheck a field.



Description of operator interface

Editing area

The keyboard includes the Latin alphabet, punctuation keys, numbers, special characters and various keys for editing messages.





Description of operator interface

■ Navigation

Welcome screen

You start in the **Production menu**.

The **icon desktop** provides direct access to the message in production and to other system menus.



Select and
send
message
to printer

Create
message

Change
message in
production
or other
message

Access print
parameters
for message
in production

View and set
counters for
message in
production

Access to
user
prompts
(if present)

Pause /
restart
printing

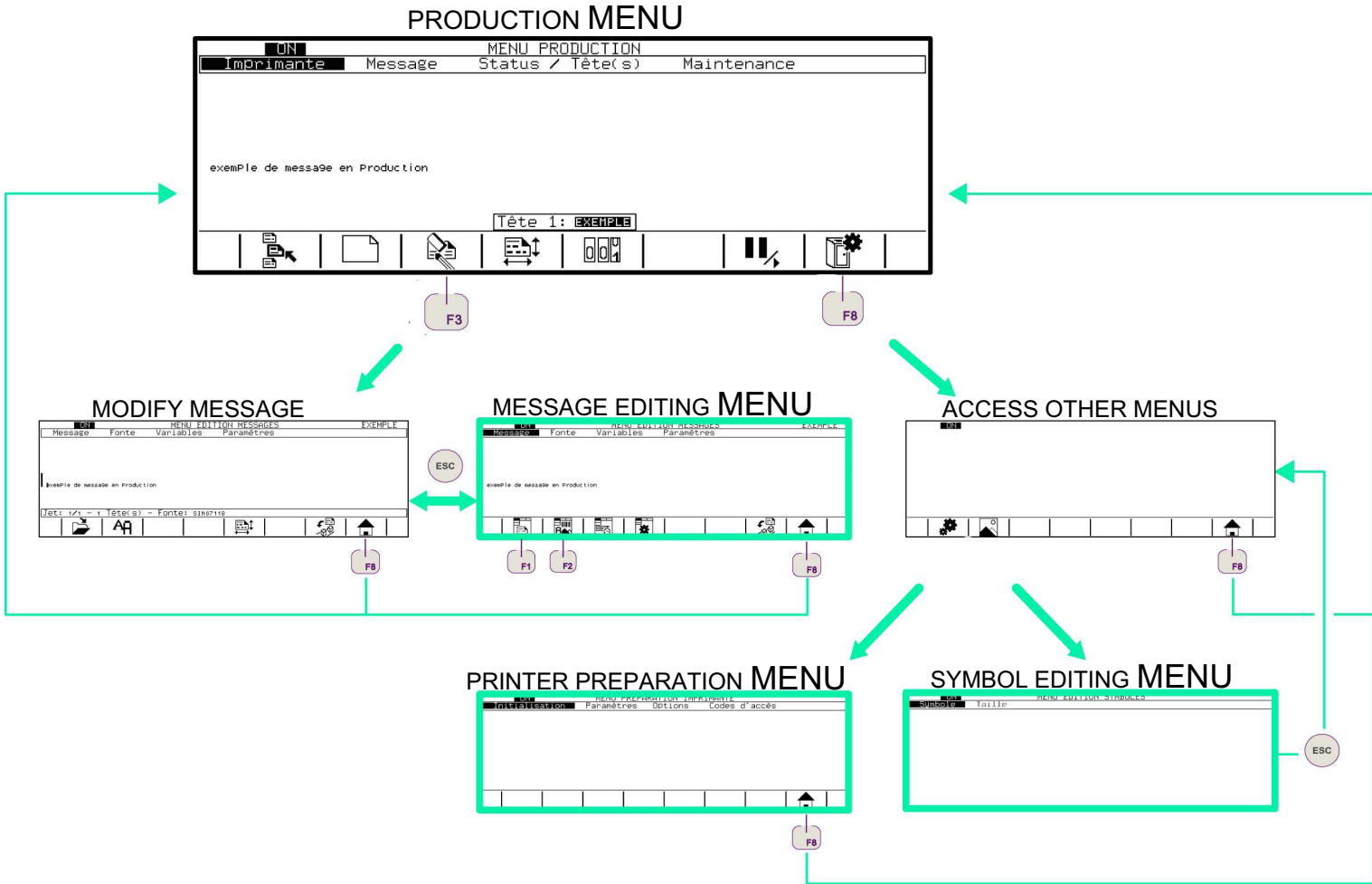
Access to
other
menus



Description of operator interface



Accessing menus





Description of operator interface

Menu overview

PRODUCTION

Printer	Message	Status/Printhead	Maintenance
Start-up Shut-down Jet(s) start-up Jet(s) stop Start Mode	Message selection  Library creation Counter display/reset  User prompt 	Status jet(s) FAULTS Motor speed*	Clear faults ELV status modification Flushing SAV

MESSAGE EDITING

Message	Font	Variables	Parameters
New  Open  Save  Save as Delete  Load printer  Close	Select font  Select Symbols  Bolderization Tabulation Barcodes	Counter Counter 2 Time Date Postdate Postdate 2 Autodating table Shift code External User prompt	Message  Counter Counter 2 Postdate Postdate 2 Shift code Barcodes

PRINTER PREPARATION

Initialization	Parameters	Options	Access codes
Language Printer Autoclock Jet alignment RS232 Connection Ethernet Connection PCMCIA/USB/SD transfer Font(s) downloading	Message Counter Counter 2 Postdate Postdate 2 Shift code Autodating table Barcodes Select font	Versions Hour counter Machine options	Keyboard Security

SYMBOL EDITING

Symbol	Size
New Open Save Save as Delete Close	Symbol size

* depending on
model



Description of operator interface

Description of icons

The icons are described as they appear in the various **icon toolbars**.

Create or modify a message.



Open a message.



Select a font



Access composition box for variable following the cursor.



Access parameters for variable following the cursor.



Alter parameters of message to be printed.



Accessing user prompts



Load message to printer and save.



Save message.



Return to **Production** menu.



Description of operator interface



Message editing menu



Access Message editing/**Message** sub-menu.



Access Message editing/**Font** sub-menu.



Access Message editing/**Variables** sub-menu.



Access Message editing/**Parameters** sub-menu.

Access to other menus.



Access **Printer preparation** menu.



Access **Symbol editing** menu



Description of operator interface



Accessing numeric keypad functions



Light on: Access to blue characters.
Light off : Access to violet characters.

Keyboard locked:



This function is used to:

- ☐ return to the start of the message from any position (in Message editing mode).
- ☐ go to the first item in a list (e.g.: library, font, etc.).
- ☐ go to the first field in a dialog box.



This function is used to:

- ☐ go the end of the message from any position (in Message editing mode).
- ☐ go to the final item in a list (e.g.: library, font, etc.).
- ☐ go to the final field in a dialog box.



displays "next list" immediately.



displays "previous list" immediately.



Deletes the character, tab or variable highlighted by the cursor in overtype mode.
Deletes the item to the right of the cursor in insert mode.



This key is used to toggle between the following options in **Message editing** mode:

- ☐ **Insert:** the cursor is displayed as a vertical line and modifications are inserted in the message without typing over the message contents.
e.g.: TE|ST
- ☐ **Overtyp**e: the cursor is displayed as a horizontal line and the contents of the message are modified by deleting characters at the cursor position.
e.g.: TEST





Description of operator interface

Keyboard shortcuts

Shortcuts using  :

 + Letter

Takes you straight to different menus using the upper-case letter in the name of the menu you want.

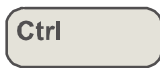
Example  +  for **Font**.

Shortcuts using  :

 + 

 + 

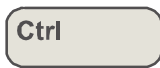
Adjust display contrast

 + 

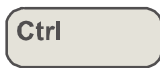
To view and select fonts already used in current message in **Message editing** mode.

 + 

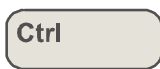
To start printing manually in  and  dialog boxes.

 + 

To view content of barcode in **Message editing** mode if the cursor is placed in front of the barcode.

 + 

To view spaces in **Message editing** mode (the screen displays dots).

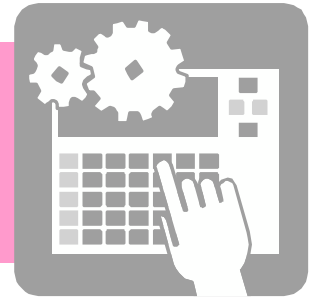
 + 

Reverse screen display mode.

 + 

To exit **Message editing** mode and return to the **Production** menu.





Daily operation



Daily operation





Daily operation

■ Printer start-up

1. Ensure printer powered up: indicator light  is on.

2. Press  to start the printer.
(▶ Production/Printer/**Start-up**)

3. Wait for approximately three minutes.

4. When the printer is ready:

□ **ON** is displayed

□ The  light goes on (steady light).



You are in the production menu, and the most recently selected message is ready to be printed.

NOTE

The Servicing section contained within this manual, contains the procedures for starting the printer after an extended shut-down period.





Daily operation

■ Printer shut-down

NOTE The procedures applicable to prolonged shutdowns are given in the Servicing section of this manual.

Stopping the 9040 - 9040 IP65 - 9040 S printer

CAUTION Do not interrupt the shut-down procedure.

1. Press  to shut down the printer.
(▶ Production/Printer/**Shut-down**)

2. Press  to confirm.

3. Select the type of shut-down you want:

Type of shut-down: ?
Long (YES)
Short (NO)
NO YES

☐ Select a **long shutdown** (= 6 min) if the printer is to be stopped for between 2 hours and 8 days (this is the normal end-of-day shutdown):

Press  to confirm **YES**.

☐ Select a **short shutdown** (= 1.5 min) if the printer is to be stopped for less than 2 hours or if it is to be restarted later the same day:

Select **NO** using  and press  to confirm.

The printer is shut down, but it is just the ink circuit which is taken out of service and some of the interface functions remain available.





Daily operation

Markem-Imaje technicians can program the printer to include an "Active stand-by" mode. In this mode, the printer performs a five-minute head cleaning cycle automatically once every hour to ensure a problem-free start-up. The mode is active for 72 hours after a prolonged shutdown and 8 hours after a short shutdown.

Stopping the **9040 Contrast** printer

This procedure applies if the printer is to be stopped for less than 2 hours.

CAUTION *Do not interrupt the shut-down procedure.*

1. Press  to shut down the printer.
(▶ *Production/Printer/Shut-down*)

2. Press  to confirm.

The shutdown phase lasts approximately 2 minutes. The jet is stopped automatically.

The printer is shut down, but it is just the ink circuit which is taken out of service and some of the interface functions remain available.

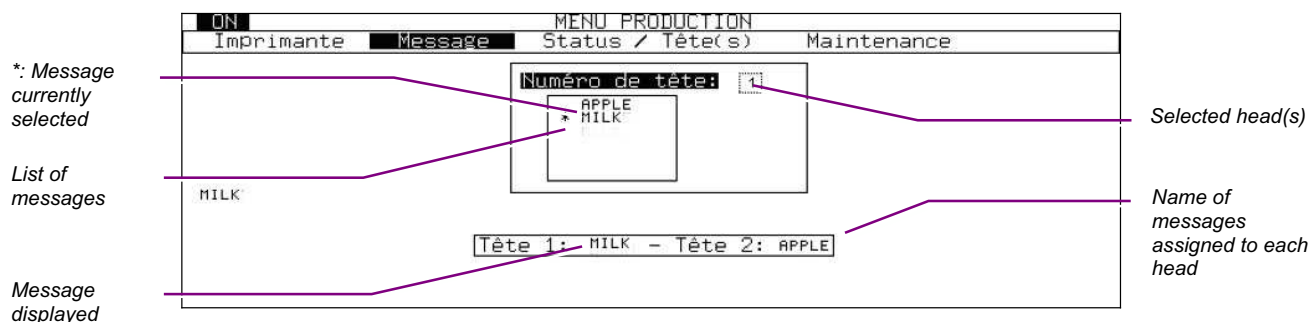




Daily operation

■ Select a message

1. Press  to select a message to be printed. (▶ *Production/Message/Message selection*)



2. On a two-head printer, specify the head to be assigned the message:

Go to the **Head number** field using  or  and use  to select head 1 (1), head 2 (2) or both heads (1+2).

3. Select the message from the list. The list either contains:

- ☐ All messages: - press  to access the input box and enter the name of the message
or
- select the message using  or .
- ☐ Pre-selected messaged from the library:
- select the message using  or .

4. press  to confirm

The selected message is ready to be printed (in production).

NOTE

See the "Configure message library" section contained in this manual, for further details on how to create and manage a library.

Messages that are not resident in the system have to be loaded into the printer via the PCMCIA card. See the "Exchange data" section of this manual for further details.





Daily operation

■ Print a message

1. Ensure jet(s) are ready: the  light is on continuously.
2. The message or messages to be printed are ready (in production).
3. The cell or cells on the TOP1/TOP2 input or the tachometer on the Tacho input sends a signal to the printer to trigger the printing operation.

The printer prints the message in production.

Stop/Restart printing

- Press  and confirm using  to stop the current print job.
- Press  and confirm using  to restart printing.

Load printer

1. Press  in Message editing mode to save and load the message.
(▶ *Message editing/Message/ **Load printer***)
2. On a two-head printer, you may need to select the head to be assigned the message and then press  to confirm

The message is ready to be printed





Daily operation

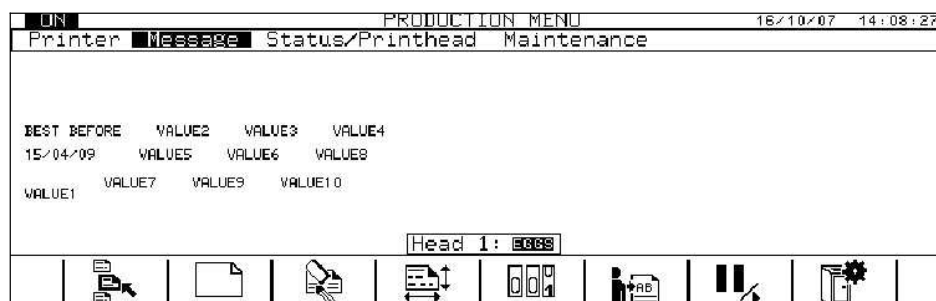
■ Modify message

Modifying the message in production

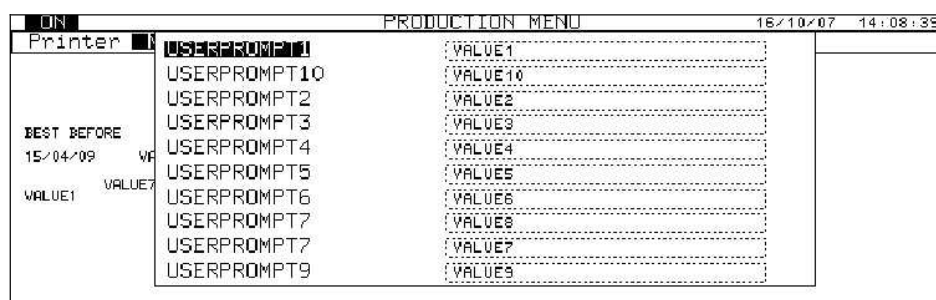
The message in production may be partially modified at the user prompt level or as a whole by editing it.

■ Modifying a user prompt

If a message in production contains at least one user prompt, the  icon is displayed in the icon desktop. A message may contain up to 20 user prompts.



1. Press  to access the user prompt dialog box:
(▶ *Production/Message/User prompt*)



Ten fields are displayed per page. Press the  or  button to move from page to page.





Daily operation

2. Press  or  to select a field to be modified from the list.
3. Press  to access the field contents then enter the new value.
4. Confirm twice. The modified field is then displayed in the message.

■ Modifying the message as a whole

1. Press 

The cursor appears in the message



2. Use the arrow keys to move the cursor within the message.
Use the keyboard to modify the content of the message.
Use the icon taskbar to alter the shape of the message, change parameter settings or modify the message variables.

The  icon (change variable composition) and/or the  icon (change variable parameters) are displayed when the cursor is positioned in front of a variable.

Press  to access all the functions in the **Message editing** menu

3. Press  to save the modified message and load it in the printer
(▶ **Message editing/Message/Load printer**).

The new message is ready to be printed.





Daily operation

Modify message

- 1- Press  then  to modify an existing message.

(▶ *Message editing/Message/Open*)



- 2- Press  to access the input box and enter the name of the message to be modified
or

Select the message to be modified from the message list using  or .

- 3- Use the arrow keys to move the cursor within the message.
Use the keyboard to modify the content of the message.
Use the icon taskbar to alter the shape of the message, change parameter settings or modify the message variables.

The  icon (change variable composition) and/or the  icon (change variable parameters) are displayed when the cursor is positioned in front of a variable.

Press  to access all the functions in the **Message editing** menu

- 4- Press  to save the modified message and load it in the printer
(▶ *Message editing/Message/Load printer*).

The new message is ready to be printed.



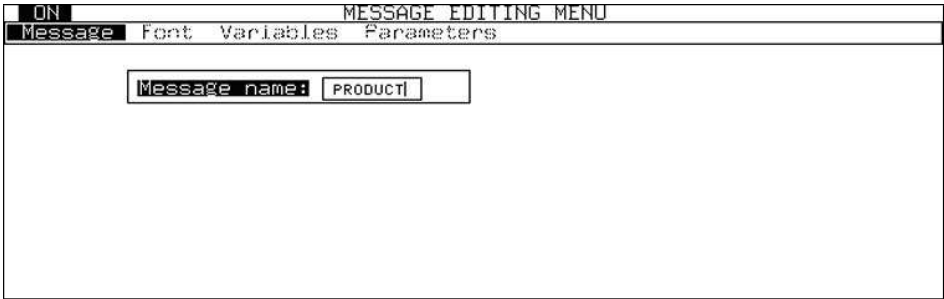


Daily operation

■ Create message

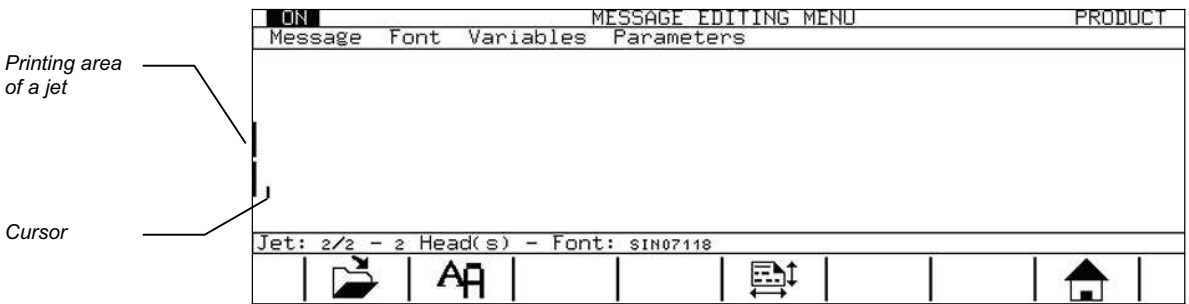
1. Press 

(▶ *Message Editing/Message/New*)



2. Enter the name of the new message (max. 8 alphanumeric characters).

3. Press  to confirm



4. The cursor starts to flash at the bottom left of the editing area.
Use the arrow keys to move the cursor inside the editing area and compose a message.

All of the functions in the **Message editing** menu can be accessed by pressing 

5. Press  to save the new message and load it in the printer
(▶ *Message editing/Message/Load printer*).

The new message is ready to be printed.

NOTE *The "Example of message programming" section within this manual contains a detailed example of how to create a new message.*



Daily operation

■ View printer parameters

A number of functions can provide the user with information on the different printer settings.

View operating parameters

► Printer preparation/Options/Hour counter

ON		PRINTER PREPARATION MENU	
Initialization	Parameters	Options	Access codes
Number of running hours: 5 Printing counter: 959985462			

This function allows you to view:

- the number of hours your printer has been in service,
- the number of printing operations performed by your printer (Pay per Print option).

CAUTION

The "Running hours" counter is set back to zero if you replace the main board or the PC board.

View ink circuit parameters



Press
(► Production/**Status/Printhead**)

In case of 2-head printer

Head: 1		Head: 2	
Status Jet(s):	RUNNING	Status Jet(s):	RUNNING
Speed jet1:	20,00 m/s	Speed jet1:	20,00 m/s
Phase jet1:	00001111	Phase Jet1:	
Speed jet2:	20,00 m/s	Speed jet2:	20,00 m/s
Phase jet2:	00001111	Phase Jet2:	00001111
Pressure:	2,89 bars	Motor speed:	1560 t/mn
Viscosity:	29 s / 4,1 cPs	Reference visco.:	29 s / 4,1 cPs
Elect. Temp:	30 °C	Additions:	04
Ink Temperature:	37 °C	FAULTS:	☒

Or Transfer: 0013 s
for 9040 Contrast





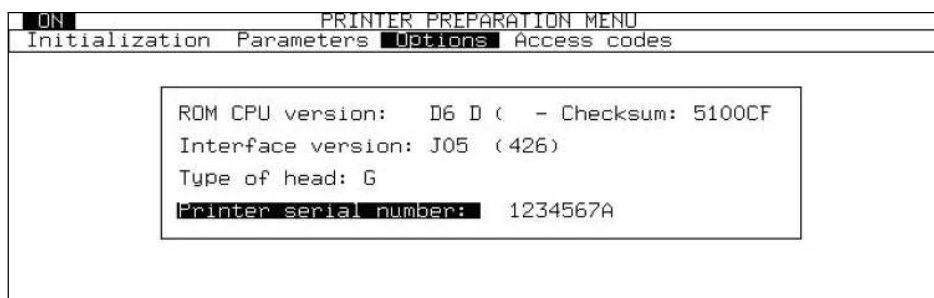
Daily operation

This sub-menu shows the readings recorded in the printer, logged in real time plus all faults detected by the printer.

- **Status jet(s):** Jet status. This field also provides access to maintenance functions. See Maintenance section for further details.
- **Speed jet 1 and Speed jet 2:** jet speed expressed in meters per second (m/s).
- **Phase jet 1 and Phase jet 2:** drop control or phase detection (000011110). Three or four consecutive ones (1) correspond to the ideal jet break-off point setting.
- **Pressure:** operating pressure, expressed in bars.
- **Viscosity:** viscosity of the ink, expressed in centipoises (cps) and seconds (s).
- **Elect. Temp. :** Temperature of the cabinet electronics compartment, in degrees Celsius (°C).
- **Ink Temperature:** Ink circuit temperature (**except for 9040 Contrast models**)
- **Motor Speed:** motor speed, expressed in rpm (**except for 9040 Contrast models**)
- **Transfer:** time to transfer ink from viscometer to accumulator, in seconds. (**9040 Contrast only**)
- **Reference visco.:** Reference viscosity value which machine uses as basis for adding additive.
- **Additions:** number of times additive added by printer since last start-up.
- **FAULTS:** ☒ : The box is checked if one or more faults or alarm conditions are detected by the printer. Press the spacebar when you are on this line to display the list of problems detected. A recommended remedy is displayed for each fault.

View programming parameters

► Printer preparation/Options/Versions



This function allows you to view the version of the programs contained in your printer, together with the printer serial number. You can re-enter the printer serial number if it becomes lost.





Daily operation

■ Adding consumables



1. Open the door of the hydraulic compartment.



2. Pull out the ink circuit using the handle.



3. Unscrew the lid(s) to open the tank(s).

Add consumable up to the halfway mark on the tank (maximum).

4. Replace the lid(s) ensuring they are sealed.

The ink container is on the right.

The additive container is on the left.



5. Press  to clear fault condition, if necessary.





Editing a message



Editing a message





Editing a message

■ General

The term **"Message"** refers to the output printed by a head.

Before you compose a message, you have to select the print speed or an algorithm in the Parameters/**Message** function.

New algorithm or print speed settings cannot be made on messages which have already been created. The content of the message has to be deleted first if you want to change these parameter settings.

The editing area on your screen depends on the number of jets in the printhead. The area is indicated by a vertical delimiter at the left of the screen (1).



When you are inside the Message editing menu, use

the  key to move from the editing area icon taskbar to the menu bar icon taskbar, and vice versa.





Editing a message

■ Message management

Save message



(▶ Message editing/Message/**Save**)

Use this command to save a message which you have just created or changed. It can only be accessed after you use **New** or **Open**.

▶ Message editing/Message/**Save as**

Use this command to save a modified version of an existing message without losing the original.

This command can only be accessed after using **New** or **Open**.

1. Select **Open** to choose the message you want to Open/Edit.
2. Make the changes to this message.
3. Select **Save as**.
4. A dialog box is displayed showing the title of the message.
5. Give the modified message a new title.

The new message title is shown at the top right of the screen and is added to the list of existing messages.

Delete message

▶ Message editing/Message/**Delete**

Use this command to delete a message from your printer's memory.

CAUTION

*The delete command is irreversible.
You are asked to confirm that you want to delete the message
selected as the deletion is permanent and non-reversible.*





Editing a message

Close message

► Message editing/Message/**Close**

Use this command to leave the message you have just created or changed.

A dialog box asks whether you want to save the message if you have not already saved it, or if you have modified an existing message. Select **YES** if you want to save the changes, otherwise select **NO** and the original message will not be modified.





Editing a message

■ Define print parameters

Change parameters of a message in production



ON PRODUCTION MENU			
Printer Message Status/Printhead Maintenance			
MESSAGE: MESSAGE		Algo	AUTO
		Forward margin: (mm)	3
		Return margin: (mm)	3
		Interval: (mm)	3
DIN characters:	☐	Top filter: (us)	100
Printing repetition:	1	Set off:	MANUAL OBJECT
Print speed: (mm/s)	100	Speed measurement:	CONSTANT SPEED
Tacho division:	---		

The fields in this dialog box are described below. The **Scrolling action**, **Transparency printing** and **Inverse printing** parameters cannot be changed to an existing message. They must be set prior to creating a message.

Change message parameters

► Message editing/Parameters/Message

ON MESSAGE EDITING MENU MESSAGE			
Message Font Variables Parameters			
Scrolling action:		Algo	AUTO
Transparency printing:	☐	Forward margin: (mm)	3
Inverse printing:	☐	Return margin: (mm)	3
DIN characters:	☐	Interval: (mm)	3
Printing repetition:	1	Top filter: (us)	100
Print speed: (mm/s)	100	Set off:	MANUAL OBJECT
Tacho division:	---	Speed measurement:	CONSTANT SPEED

This dialog box contains all the settings you need to adapt the message to the production line. These settings are specific to each message.

■ Default parameter values

The default message parameters are common to all messages and are configured in the
► *Printer preparation/Parameters/Message* menu.

The dialog box is identical.

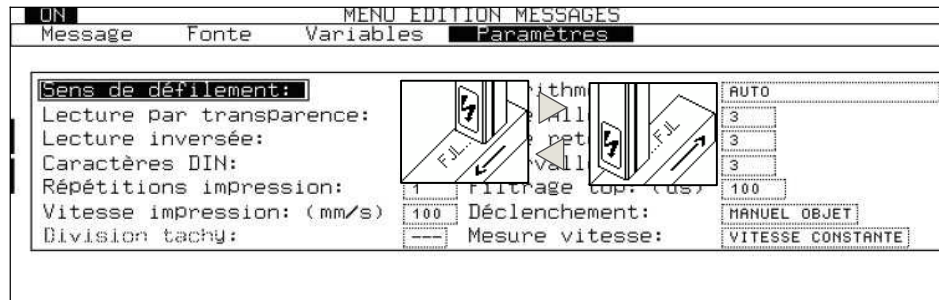




Editing a message

■ Scrolling action

The setting for this parameter depends on how your printer is set up on the production line and on the results you want to achieve from the printing operation.



The  key shows the direction of travel of the object. Press tab key a second time to enlarge the image.

Press the  and  arrow keys to change the scrolling action displayed.

This parameter can be used in conjunction with the **Transparency printing** and **Inverse printing** parameters to read the message in various different ways.

■ Transparency printing

Check this box to apply transparency printing to the message.

■ Inverse printing

Check this box to apply inverse printing to the message.

■ DIN characters

Check this box to obtain a message written like this:

123ABC CBA321

If you have selected a "chimney" font in the  function (▶ Message editing/Font/**Select font**), printing output will be like this:

┌ 2 3 4 5 6 7 8 9 10 ┐

CAUTION

DIN characters can only be obtained on single-nozzle heads.





Editing a message

■ Printing repetition

This parameter is used in object set-off mode (**Set off** field set to OBJECT) to repeat printing at a pre-set number of times regardless of the length of the object be marked.

Enter a value between 0 and 255.

Example:

Printing repetition: 1 means that a single message is printed and is not repeated.

Printing repetition: 2 means that two messages are printed for every DTOP received.

■ Print speed

If the product travels at a constant speed (**Speed measurement** field set to CONSTANT SPEED), enter the speed value in millimeters per second.

■ Tacho division

This field is only applicable if tacho mode is selected (**Speed measurement** field set to TACHO)

Enter a number between 1 and 255. Increase or decrease this value according to adjust the printed character width obtained when printing.

■ Algo

MESSAGE EDITING MENU	
Message Font Variables Parameters	
Scrolling action:	Algo
Transparency printing:	☐ Forward
Inverse printing:	☐ Return
DIN characters:	☐ Interval
Printing repetition:	1 Top fil
Print speed: (mm/s)	100 Set off
Tacho division:	--- Speed measurement

#	Dot	Speed	H/O	Name
001	5	4484	10	001610_05_01_28_05
093	5	1534	10	093610_05_01_28_14
032	5	5580	10	032610_05_01_28_04
094	2x5	1062	10	094610_2x5_1_28_23
095	1x5	531	10	095610_3x5_1_28_46
048	2x5	2029	10	048610_2x5_1_28_11
030	3x5	1395	10	030610_3x5_1_28_16
041	4x5	930	10	041610_4x5_1_28_24
002	7	3188	10	002610_07_01_28_07

Choose an algorithm or allow the printer to select the most appropriate one for the programmed print speed automatically (**AUTO**).

The printer will suggest a selection of suitable fonts in the  function (▶ Message editing/Font/**Select font**) on the basis of the setting made.

The message editing fonts and available print lines are determined by the algorithm chosen.



Editing a message



REMINDER

New algorithm or print speed settings cannot be made on messages that have already been created.

The content of the message has to be deleted first if you want to change these parameter settings.

■ Forward margin

Enter a forward margin value (in millimeters).

This parameter represents the space between the point where the object is detected and the point where the message starts to be printed if the printed message starts from the first character.

■ Return margin

Enter a return margin value (in millimeters).

This parameter represents the space between the point where the object is detected and the point where the message starts to be printed if the printed message starts from the final character.

■ Interval

Enter an interval value (in millimeters).

This parameter represents the space between two print operations in repetitive set-off mode (**Set off** field set to REPETITIVE) or if "**Printing repetition**" is active.

■ Top filter

Enter a time value (in μ s).

This parameter is the minimum time value that the object detection signal has to reach to be taken into account by the printer. You can increase this time value if you have noticed that messages have been printed at the wrong time.

■ Set off

To determine how printing is to be set off.

Options:

- ☐ MANUAL OBJECT or MANUAL AUTO: If you want to perform manual print tests.
 - . MANUAL OBJECT: Printing is triggered when you press the spacebar on your keyboard. Printing is performed every time the spacebar is pressed.
 - . MANUAL AUTO: Printing is triggered when you press the spacebar and is repeated until you press the spacebar again.

This means that you can print out the same message automatically several times between each time you press the spacebar manually.



Editing a message



Options:

- ☐ OBJECT or REPETITIVE when the system is in operation.
 - . OBJECT: Printing is triggered when the DTOP signal is received by the printer. You print one message for each object detected.
 - . REPETITIVE: Printing is triggered when tDTOP signal is received and remains constant, printing continues for as long as the DTOP signal is activated or until the specified number of repeat print operations is reached.

■ Speed measurement

Specify speed measurement method:

- ☐ CONSTANT SPEED

Speed not measured - speed assumed to be constant. A printing speed needs to be entered in mm/s

- ☐ TACHO

Select this field if you want to use a tachometer (tachometer pulse generator/Encoder). This speed detection device is used to synchronize the printer print speed continuously with the speed at which the objects to be printed travel along the production line.

It is particularly useful when the object travel speed is not constant.

See "Input/Output connections" section contained in this manual for further information on connecting the photocells and the tachometer.

Specify print resolution

► Printer preparation/Initialization/Message/**Horizontal resolution**

Enter horizontal resolution value according to the head used:

- ☐ G head: 2.8 dots/mm.
- ☐ M head: 4.5 dots/mm.
- ☐ P head: 7.0 dots/mm.





Editing a message

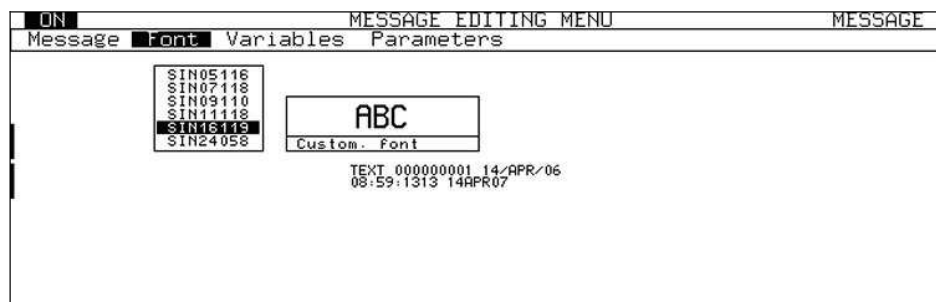
■ Define character settings

These functions allow the user to select the type, style and size of the characters or symbols used.

Select a font

A "font" is a set of characters or symbols which are represented in the same style and which have same size.

✎ **AA** (▶ *Message editing/Font/Select font*)



This dialog box offers all available fonts applying to the algorithm that was selected in the ▶ *Message editing /Parameters/Message/Algorithm* function.

The user is given a preview of some of the characters in the pre-selected font. When the choice is confirmed, the cursor adopts the size of the font selected and line delimiters show message lines, which are accessible for printing.

The fonts correspond to the keyboard characters for languages, which have their own keyboard (Latin characters, Arabic characters, etc.). The fonts for other languages, such as Thai or Korean, correspond to the characters selected using the

▶ *Message editing/Font/Select symbols* function

The Technical Specifications section of this manual contains a list of the fonts and algorithms available in the printer.





Editing a message

■ Configure font list

► Printer preparation/Parameters/Select font

PRINTER PREPARATION MENU	
Initialization	Parameters Options Access codes
HEB24099 ☒ J1000 ☒ OC16_ITF ☒ PARAL ☐ SCI05084 ☐ SCI07119	

This function allows the user to change the list of available fonts shown in the previous dialog box. Check fonts on the list, which are to be made available in Message Editing mode.

Bolderize a character

► Message editing/Font/Bolderization

MESSAGE EDITING MENU		MESSAGE
Message	Font Variables Parameters	
Bolderization: 1 TEXT 000000001 14/APR/06 09:06:06 14APR07		

This function is used for printing portions of the message in bold characters so that they stand out without having to change their height.

Enter the bolderization factor to be applied (between 1 and 9). A bolderization setting of 9 provides the strongest bold effect (the default value is 1).

All symbols selected will now be written on the screen with the specified bolderization setting (what you see on the screen is what you get on printed output).

There is no limit to the number of bold characters that can be contained in a message or in a line.

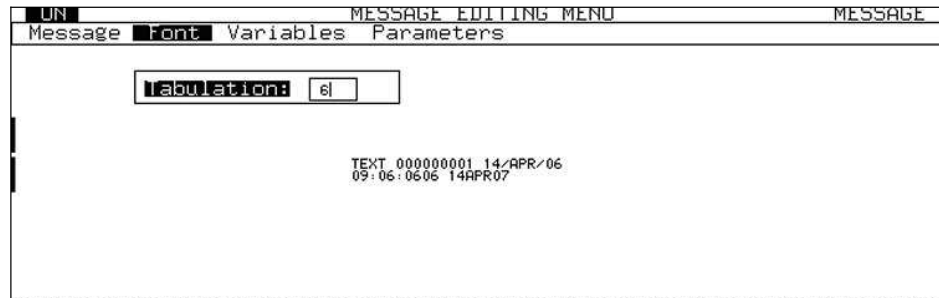




Editing a message

Use of tabulation feature

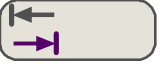
► Message editing/*Font/Tabulation*



This function is used for creating a blank space between two characters or symbols, which has a different width to the width of the standard space character in the font used.

Enter the number of black dot rows to be contained in the blank space (between 1 and 255).

To insert a horizontal tabulation:

- position the cursor at the place where you want to insert the tab,
- change to tabulation mode: press  key,
- insert a tabbed space: press  space key,
- exit tabulation mode: press  key.

Tabulation spacing can be added to or deducted from tabulation at any time when you are editing a message.

To adjust a horizontal tabulation:

- position the cursor on the tabulation,
- change to tabulation mode: press the  key,
- adjust width using the  or  arrow keys,
- exit tabulation mode: press the  key.

The  symbol is displayed on the left at the bottom of the screen when you are in tabulation mode.





Editing a message

NOTE

Vertical tabulation:

You can move the cursor position up or down by combining the



key with the  or  arrows.

This means that the elements in a message line do not have to be in a fixed position. An example of this is as shown below:

VARIABLE POSITIONING ^{OF} MESSAGE ELEMENTS





Editing a message

■ Use date and time

If you want to print the time and date in a message, you first have to specify time and date parameter settings, then compose these elements, and finally insert them into the message.

Specify time and date parameter settings

► Printer preparation/Initialization/**Autoclock**

ON PRINTER PREPARATION MENU
Initialization Parameters Options Access codes

Hour (hh:mm:ss):	09:32:09	Run/Stop autodating:	☐
Date (dd/mm/yy):	19/11/93	Date format:	dd/mm/yy
Date change Hour (hh:mm):	00:00		mm/dd/yy
			yy/mm/dd

The printer date and time should normally be set when the printer is installed.

■ Hour (hh:mm:ss) / Date (dd/mm/yy)

Enter time and date.

■ Date change Hour (hh:mm)

Enter time when the date will change. Default is 00:00. Use this when you want the date to change at a specified hour of the day other than at 12:00 am.

■ Run/Stop autodating

☒ : Autoclock display and print data is fixed.

☐ : Autoclock display and print data changes in real-time.

■ Date format (dd/mm/yy)

Select format to be used for displaying the date.

■ First day of the week

► Printer preparation/Initialization/**Printer**

Specify day on which week starts. The default value is Sunday.





Editing a message

Compose and insert date

► Message editing/Variables/Date

MESSAGE EDITING MENU			
Message Font Variables Parameters			
Day of the week:	☐ X	Week of the year:	☐ WW
Day of the month:	☐ DD	Month of the year (Figure):	☐ MM
Day of the year:	☐ JJJ	Month of the year (Letter):	☐ MMM
Last figure of year:	☐ Y	Year:	☐ YY
Composition:			

This function is for inserting calendar details in your message. Compose your "Date" variable using the following elements:

- ☐ Day of the week (numerical value - from 1 for Sunday to 7 for Saturday).
- ☐ Day of the month : 1 to 31.
- ☐ Day of the year: 1 to 366.
- ☐ Last figure of the year.
- ☐ Week of the year: 1 to 53.
- ☐ Month of the year: 1 to 12 (figure) or 3 (Letter).
- ☐ Year.

The **Composition** line displays the date elements as they are specified.

Authorized separators (**space**), (:), (-) and (/) should be entered in the composition box via the keyboard.

Press  when you have finished composing the date to insert it in the message at the cursor location.





Editing a message

Compose and insert time

► Message editing/Variables/**Time**

MESSAGE EDITING MENU			
Message	Font	Variables	Parameters
Hours Minutes Seconds Composition ☐ HH ☐ NN ☐ SS			

This function is for inserting clock details in your message.

Compose your time variables using the hours, minutes and seconds fields in the order you want them to appear.

The **Composition** line displays the time elements as they are specified.

Authorized separators (**space**), (:), (-) and (/) should be entered in the composition box via the keyboard.

Press  when you have finished composing the time to insert it in the message at the cursor location.





Editing a message

■ Use a counter

If you want to print a counter, you first have to specify the parameter settings and then insert it into the message.

You can also view and reset counter values.

You can insert two different counters in each message.

Display and reset counters

 (▶ *Production/Message/Counter display/reset*)

ON PRODUCTION MENU			
Printer	Message	Status/Printhead	Maintenance
Counter 1.1:	123456789	Reset	☐
Counter 1.2:		Reset	☐
Counter 2.1:	123456789	Reset	☐
Counter 2.2:	123456789	Reset	☐

This function is for viewing counter values and for resetting counters to their original value if necessary.

When the counter value is displayed, you can reset it to its original value by checking the corresponding **Reset** box.

Set counter parameters

▶ *Message editing/Parameters/Counter or Counter 2*

ON MESSAGE EDITING MENU			MESSAGE
Message	Font	Variables	Parameters
First digit:	000000001	Incrementation type:	MESSAGE
Last digit:	999999999	Leading zeros:	☒
Counter step:	01	Reinit./top object :	☐
Batch counter:	000001		

Select **Counter** or **Counter 2**. You can now access the parameters for the counter you have chosen and make any changes you require:



Editing a message



■ First digit and last digit

Enter start and end values. These are the limit values between counter values changes. The content of the counter increases if the first digit is lower than the last digit.. The counter decrements if the first digit is greater than the last digit. When the counter reaches the last digit, it starts again with the First digit.

■ Counter step

Enter counter increment value: between 00 and 99.

■ Batch counter

Specify number of objects in the batch. The standard counter is incremented when the batch value is reached.

■ Incrementation type

Selected method used to change counter value. The method determines the way in which the counter is incremented:

- ☐ OBJECT: on number of objects detected.(DTOP Signal)
- ☐ MESSAGE: on number of messages printed.
- ☐ EXT: on data on INCC1 and INCC2 inputs on the industrial interface board.
- ☐ OVERFLOW (Counter 2 only): when counter 1 reaches maximum value.

■ Leading zeros

Check this box if you want to show non-significant leading zeros in front of the counter value. The position taken by the counter in the message always takes account of leading zeros, whether they're printed or not.

NOTE

Leading zeros cannot be deleted in barcodes.

■ Reinit./top object

Check this box if you want the counter to be reset to its initial value every time the "Top object" input signal is activated.



Editing a message



■ Default parameter values

The default parameters are common to all messages and are configured in the

► *Printer preparation/Initialization/Message/Counter or Counter 2* menu

The dialog box is identical.

Insert counter

► *Message editing/Variables/Counter or Counter 2*

Use this function to insert counters in your message. The counter is shown in the message with its initial value.





Editing a message

■ Using user prompts

User prompts hold variable information entered by the operator during production.

This function is used to edit a user prompt in a message. Up to 20 different user prompts per message may be inserted. Editing a user prompt involves defining the field and inserting it in the message.

Defining a user prompt

► *Edit messages/Variables/User prompt*

ON MESSAGE EDITING MENU BOTTLE

Message Font Variables Parameters

Size (#. of characters): 1

Element identification:

Default value:

This function is used to reserve space within a message for user prompts.

The dialog box is used to set the following parameters:

- Size (No. of characters): the variable size (01 to 99 characters).
- Element identification: a descriptive identifier.
- Default value: the value printed by default if nothing is entered in production.

Inserting a user prompt

Move the cursor to the desired location and press  to insert the field in the message.

Modifying a user prompt

See the "Modifying a message" section.



Editing a message



■ Use a postdate

A postdate is a date which is deferred in relation to the current date.

If you want to print a postdate, you first have to specify the parameter settings, then compose the date and finally insert it into the message.

You can insert two different postdates in each message.

Set postdate parameters

► *Message editing/Parameters/Postdate or Postdate 2*

ON MESSAGE EDITING MENU MESSAGE

Message Font Variables Parameters

Unit: DAY(S)

Duration: 365

TEXT 000000001 08/JUN/06
09:29:1717 08JUN07

The dialog box asks you to enter the following values for each postdate:

- ☐ Duration: between 0 and 9999.
- ☐ Unit: day or month.

The time at which the date changes is common to all postdates and can be altered in:

► *Printer preparation/Initialization/Autoclock*

■ Default parameter values

The default parameters are common to all messages and are configured in the

► *Printer preparation/Parameters/Postdate or Postdate 2* menu

The dialog box is identical.





Editing a message

Compose postdate

► Message editing/Variables/**Postdate** or **Postdate 2**

MESSAGE EDITING MENU							
Message		Font		Variables		Parameters	
Post-day month	:	☐	dd	Post-month year (Figure):	☐	mm	
Post-day year	:	☐	jji	Post-month year (Letter):	☐	mmm	
Post-week year	:	☐	ww	Post-year	☐	yy	
Composition:							

This menu allows you to insert postdate elements in your message.

The dialog box offers the following setting for composing your "Postdate" variable:

- ☐ Post-day month: 1 to 31.
- ☐ Post-day year: 1 to 366.
- ☐ Post-week year: 1 to 53.
- ☐ Post-month year: 1 to 12 (Figure) or 3 (Letter).
- ☐ Post-year.

The **Composition** line displays the date elements as they are specified.

Authorized separators - (**space**), (:), (-) and (/) - should be entered in the composition box via the keyboard.

Insert postdate



Press  when you have finished composing the postdate to insert it in the message at the cursor location.





Editing a message

■ Use a barcode

If you want to print a barcode, you first have to specify the parameter settings, then compose the code and finally insert it into the message.
You can insert up to four barcodes into each message.

Set barcode parameters

► *Message editing/Parameters/Barcodes*

MESSAGE EDITING MENU	
Message	Font Variables Parameters
Interleaved 2/5	
CODE 39	
ITF 14	
ITF 6	
EAN / UPC	
EAN128 / CODE128	
DATAMATRIX	

Select the type of barcode from the list displayed.

The following types of codes are available:

- ☐ Industrial: interleaved 2 of 5, code 39, ITF14, ITF6.
- ☐ Distribution: EAN 13, EAN 8, UPCA, UPCE, EAN 128, code 128, HIBC/EAN.
- ☐ Two-dimensional: Datamatrix.

See "Barcode characteristics" section contained in this manual for further details on these codes.

Confirm selection. The code parameter screen is displayed:

MESSAGE EDITING MENU																					
Message	Font Variables Parameters																				
<table border="1"><tr><td>Narrow bars:</td><td>1</td><td>Plain text:</td><td>NONE</td></tr><tr><td>Narrow spaces:</td><td>1</td><td>Height:</td><td>7</td></tr><tr><td>Wide bars:</td><td>3</td><td>Inverse print:</td><td>☐</td></tr><tr><td>Wide spaces:</td><td>3</td><td>Check digit:</td><td>☐</td></tr><tr><td colspan="2"></td><td>Optimization:</td><td>☐</td></tr></table>		Narrow bars:	1	Plain text:	NONE	Narrow spaces:	1	Height:	7	Wide bars:	3	Inverse print:	☐	Wide spaces:	3	Check digit:	☐			Optimization:	☐
Narrow bars:	1	Plain text:	NONE																		
Narrow spaces:	1	Height:	7																		
Wide bars:	3	Inverse print:	☐																		
Wide spaces:	3	Check digit:	☐																		
		Optimization:	☐																		



Editing a message



The dialog box is specific to the type of code selected, and the user can only access parameters settings that can be changed. Other parameters are shown in dotted characters and cannot be modified.

■ **Narrow bars**

Enter a value from 1 to 4 units (default value is 1 for distribution codes). The **Narrow bars** value must always be less than the **Wide bars** value.

■ **Narrow spaces**

Enter a value from 1 to 4 units (default value is 1 for distribution codes). The **Narrow spaces** value must always be less than the **Wide spaces** value.

■ **Wide bars**

Enter a value from 2 to 9 units (default value is 2 for distribution codes).

■ **Wide spaces**

Enter a value from 2 to 9 units (default value is 2 for distribution codes).

■ **Plain text**

Specify whether the barcode is to be printed below the code (BELOW) or whether no text is to be included (NONE)

■ **Height**

Select one of the height values available. This value is expressed in dots and must correspond to the height of the fonts loaded.

■ **Inverse print**

Select whether to print in reverse video - yes ☒ or no ☐ (except for Datamatrix).

■ **Check digit**

Choose whether check digit present- yes ☒ or no ☐.

If you choose yes, the printer adds the check digit to the end of the barcode automatically. The check digit is not displayed and is only available for industrial codes.

■ **Optimization**

Check this box if you want to optimize the size of CODE 128 and EAN 128 barcodes.





Editing a message

■ Bolderization

This parameter is only displayed for Datamatrix codes.

Enter cell size value: 1 or 2. This multiplies the selected height by 1 or 2.

If you select 2, the code height cannot be below 16 dots.

■ Default parameter values

► *Printer preparation/Parameters/Barcodes*

This function allows the user to select a code type and specify default parameters that are common to all messages.

The dialog box is identical.

Compose a barcode

► *Message editing/Font/Barcodes*

ON MESSAGE EDITING MENU
Message Font Variables Parameters

Interleaved 2/5

Counter
Counter 2
Time
Date
Postdate
Postdate 2
Shift code
External element

Composition: I

Compose your code by inserting fixed or variable elements.

■ Fixed elements

Authorized fixed elements (numbers, letters or spaces) can be entered direct into the Composition line.





Editing a message

■ Variable elements

The variable parameter values may need to be specified in the ► *Message editing/Parameters menu*.

- Counter/Counter2/Shift code

To insert these variable elements into the barcode, go to the line concerned and press



. The variable is displayed in the composition line.

- Time/Date/Postdate/Postdate2

These variables need to be composed before they are inserted in the barcode.

To compose an element, go to the line concerned and press the  key. The composition dialog box is displayed.

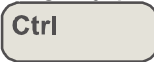
Elements are composed in the same way as variables in a message and the dialog boxes are identical.

Press  when you have finished composing the variable to insert it in the barcode. The variable is displayed in the composition line.

- User prompt

This variable item cannot be inserted in a bar code.

NOTE

You can view the composition of a code which has already been entered or a code which you are in the process of creating, by placing the cursor in front of the code and pressing the  +  keys simultaneously.

Insert a barcode

Press  when you have finished composing the code to insert it in the message at the cursor location.





Barcode characteristics

■ Industrial codes



Interleaved 2 of 5

Barcodes can be transcribed in numeric characters only.

These characters can be variables (counters, dates, etc.).

Max. 32 characters

If there is no check digit (o), the number of characters entered must be even. If there is a check digit (x), the number of characters entered must be odd.

Dates, postdates and shift codes cannot be represented in alphabetic form.

Code 39

Barcodes can be transcribed using alphabetic characters, numbers and the following symbols: = . , space \$ / + %

These characters can be variables (counters, dates, etc.).

Max. 32 characters.

The check digit is optional.

ITF 14, ITF 6

Due to their height, these barcodes can only be printed using G-type twin-jet print heads. The code height is 54 dots and both available jets are used.

This means that any items, which are not part of the ITF code, have to be inserted in the message before or after the code itself.

These codes can only transcribe numeric characters into barcodes.

ITF 14 barcodes are required to have fourteen characters.

ITF 6 barcodes are required to have six characters.

The final character is a checksum character (14th character for ITF 14 and 6th character for ITF 6). If this character cannot be entered, the printer calculates it and sets it in position automatically. If the character is entered with an incorrect value, the printer tells the user and replaces the value entered with the correct value automatically.



Editing a message



■ Distribution codes

EAN / UPC

Options available: EAN 13, EAN 8, UPCA, UPCE

These codes can only transcribe numeric characters into barcodes.

- ☐ EAN 13 codes are required to have thirteen characters.
- ☐ EAN 8 codes are required to have eight characters.
- ☐ UPCA codes are required to have twelve characters.
- ☐ UPCE codes are required to have eight characters, and the first digit is always 0.

These characters can be variables (counters, dates, etc.).

The final character is a checksum character. If this character cannot be entered, the printer calculates it and sets it in position automatically. If the character is entered with an incorrect value, the printer tells the user and replaces the value entered with the correct value automatically.

EAN 128, CODE 128

Options available: EAN 128, CODE 128, HIBC/EAN.

Max. 39 characters.

HIBC/EAN codes

These codes are only available in mode C.



Editing a message



EAN 128/CODE 128 codes

ON MESSAGE EDITING MENU
Message Font Variables Parameters

CODE 128

Counter
Counter 2
Time
Date
Postdate
Postdate 2
Shift code
External element
Special characters
128 mode: B

Composition: ☒

The character set is divided into four menus that can be found in **128 mode** (Code A, Code B, Code C) and **Special characters**:

Mode A: includes all standard upper-case alphanumeric characters, command characters and special characters.

Mode B : includes all standard upper-case and lower-case alphanumeric characters, numeric characters and special characters. This is the default mode and size is optimized.

Mode C : includes the set of 100 pairs of digits from 00 to 99, plus special characters (characters are entered two at a time).

Special characters: includes command characters (NUL, SOH, etc.) plus special characters (FNC1, SHIFT, AI, etc.). The content of the dialog box depends on choice made for Mode 128.

These characters can be variables (counters, dates, etc.).

Reverse video characters A, B or C included in the composition line corresponds to codes A, B or C.

CAUTION

If you checked the "Optimization" parameters in the parameters menu, the only mode available is mode B.





Editing a message

■ Datamatrix code



- The code used is type ECC200 and the format is calculated automatically (square or rectangle).
- Cell size (stretch) is programmable: 1 or 2 drops.
- The code height can vary between:
 - 8 and 24 cells in stretch mode 1
 - 8 and 12 cells in stretch mode 2
- All types of variables can be printed with the code.

Maximum code capacity:

Code height (number of cells)	8	8	10	12	12	12	16	16	16	18	20	22	24
Code width (number of cells)	18	26	10	12	26	36	16	32	49	18	20	22	24
Number of coded numeric characters	10	16	6	10	32	44	24	64	98	36	44	60	72
Number of coded alphanumeric characters	7	12	4	7	24	33	18	48	63	27	33	45	54
Number of coded 8-bit ASCII characters	5	8	3	5	16	22	12	32	49	18	22	30	36

Stretch 1

Printed code height (number of drops)	8	8	10	12	12	12	16	16	16	18	20	22	24
Printed code width (number of drops)	18	26	10	12	26	36	16	32	49	18	20	22	24

Stretch 2

Printed code height (number of drops)	16	16	20	24	24	24
Printed code width (number of drops)	36	52	20	24	52	72

CAUTION

*The resolution of the message will be determined by the datamatrix code resolution value.
In some cases, it may be necessary to increase the head/object distance to avoid superimposing drops.
This will make it possible to read the code.*





Editing a message

■ Use a shift code

Shift codes are used for printing cyclical time information over a one-day period. The code starts at a specified time.

If you want to print a shift code, you first have to specify the parameter settings and then insert it into the message.

You can print one shift code per message.

Set shift code parameters

► Message editing/Parameters/Shift code

ON MESSAGE EDITING MENU MESSAGE

Message Font Variables Parameters

Start time: (hh:mm) 00:00

Interval: (hh:mm) 00:01

Type: NUMERICAL

TEXT 000000001 08/JUN/06
09:35:2727 08JUN07

This dialog box contains all the data you need to change your shift code..

■ Start time: (hh:mm)

Enter the time when the first shift starts.

■ Interval

Specify duration of the shifts. All shifts must be equal in length.

■ Type

Select method you want to use to represent shift code:

- ☐ NUMERICAL: 2 digits from 01 to 23
- ☐ LETTER: One letter from A to Z
- ☐ LETTER (-I -O): The letters I and O will not be used lwhen printing the shift code.



Editing a message



Example:

- ☐ Start time : 06 : 00
- ☐ Interval : 08 : 00
- ☐ Type : LETTER

The printer will print:

- ☐ A - 06.00 to 13.59,
- ☐ B - 14.00 to 21.59,
- ☐ C - 22.00 to 05.59 the next day and so on.

■ Default parameter values

The default parameters are common to all messages and are configured in the

► *Printer preparation/Parameters/Shift code* menu

The dialog box is identical.

Insert shift code

► *Message editing/Variables/Shift code*

This function is for inserting a shift code in your message. An alphabetic or numerical character is displayed in the message at the cursor location, based on your parameters.





Editing a message

■ Use an external variable

An external variable is an item of variable data that will be sent via the external RS232/V24 or RS422 link (e.g. weight value given by a balance or data from a controller or barcode reader).

If you want to print an external variable, you first have to define it and then insert it into the message.

Define external variable

► *Message editing/Variables/External*

ON MESSAGE EDITING MENU MESSAGE

Message Font Variables Parameters

Size (n. of characters): 1

Symbol for visualization: *

TEXT 000000001 08/JUN/06
09:35:2727 08JUN07

This function is for reserving space for the external variable inside a message. If no data is transmitted, the reserved spaces will be represented by a selected symbol that can be seen on the screen and when the message is printed.

The dialog box allows you to specify:

- ☐ Size (nb of characters): number of spaces to be reserved - from 01 to 99.
- ☐ Symbol for visualization: the symbol to be displayed.

Insert an external variable

Press  when you have defined the reserved space to insert it in the message at the cursor location.





Editing a message

■ Use autodating table

This function is for inserting all of the time and date variables encoded using the autodating table.

If you want to print an autodate variable, you first have to specify the parameter settings, compose the variable and then insert it into the message.

Set autodate element parameters

► Printer preparation/Parameters/Autodating tables

ON	PRINTER PREPARATION MENU		
Initialization	Parameters	Options	Access codes
Month of the year Alpha Shift Code Numeric Shift Code Hours Minutes Days of the week Days of the month Days of the year Weeks Years			

This function is for encoding time and date data in the form of a code consisting of one to three alphanumeric characters.

Select a variable to be encoded. The following screen is displayed (except for Alpha shift code).

Example: Encoding the time

ON	PRINTER PREPARATION MENU		
Initialization	Parameters	Options	Access codes
Nb. Fields: 24 Field: 1 Value: 001 COPY - +			





Editing a message

Compose autdating variable

► Message editing/Variables/Autdating tables

MESSAGE EDITING MENU			
Message Font Variables Parameters			
Hours:	☐ HHH	Day of the year:	☐ JJJ
Minutes:	☐ NNN	Week of the year:	☐ WWW
Day of the week:	☐ XXX	Year:	☐ YYY
Day of the month:	☐ ODD	Month of the year:	☐ MMM
Composition:			

This dialog box is for composing your "Autdating table" variable.

The **Composition** line displays the date elements as they are specified.

Authorized separators - (space), (:), (-) and (/) - should be entered in the composition box via the keyboard.

Insert an autodate variable



Press  when you have finished composing the autodate variable to insert it in the message at the cursor location.





Editing a message

■ Use of symbols

A symbol can be a letter of the alphabet, a number, a special symbol or a special shape, such as a logo. A set of symbols of the same size constitutes a font.

Select a symbol

► Message editing/Font/Select Symbols



This dialog box allows the user to select symbols or characters belonging to the font previously selected in the ► Message editing/Font/Select font function, and insert them into a message.

This is very useful if you are applying special fonts containing characters, which are not present on the keyboard, like logos and special signs.

The function is used for editing messages in languages such as Korean or Thai.

The font characters are displayed on the screen. If you can't see the entire font, press the

left and right arrow keys, and the  and  keys to view all of the characters.

To insert one or more symbols or characters:

- Use the arrow keys to go to the character concerned,

- Press the  key - the character is shown in the composition area,

- Press the  key - the string you have composed is inserted in the message at the cursor position.





Create symbol

■ Normal procedure

Create a font

- ☐ Define the font
- ☐ Specify the size of the symbols

Create the symbol

Save the symbol

Close the font

Download the font

■ Create a font

► Symbol editing/Symbol/New

This command allows you to create a new symbol to be included in a font. The dialog box asks you to give the following information to define the font:

- ☐ font name (max. 8 characters),
- ☐ font number (between 201 and 255),
- ☐ number for the symbol within the font (between 001 and 224).

NOTE

We recommend that you do not use the first font symbol number (001) as this is reserved for the "space" character and is used to replace characters that are not used in the font with blanks automatically.

A second dialog box asks you to specify the size to be applied to all of the font symbols:

- ☐ height - from 1 to 24 dots
- ☐ width - from 1 to 80 dots.

CAUTION

The height of the symbol is defined when the symbol is created. The symbol can only be printed if the printer contains a Markem-Imaje font with a height that is equal to or greater than the height of the symbol being created.





Editing a message

■ Create the symbol

The printer displays the following screen when you have specified the font name, font number, symbol number and symbol size. Draw the symbol you want to print using the keys indicated below.

Font number

Font name

Symbol number

Number of symbols
contained in the font

Coordinates of cursor
within grid

Drawing mode

>> : dot by dot

- : line

□ : zone

(Change mode using the  key)

Dot color

■ : black

□ : white

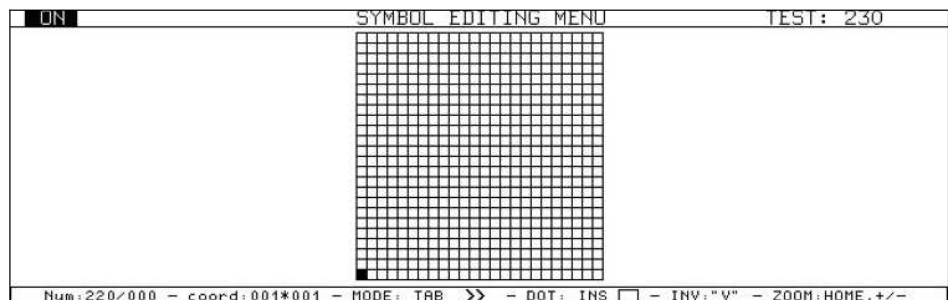
(Change color using the  key)

Reverse video

( key)

Zoom

(Press the  +  keys or the  +  keys simultaneously)

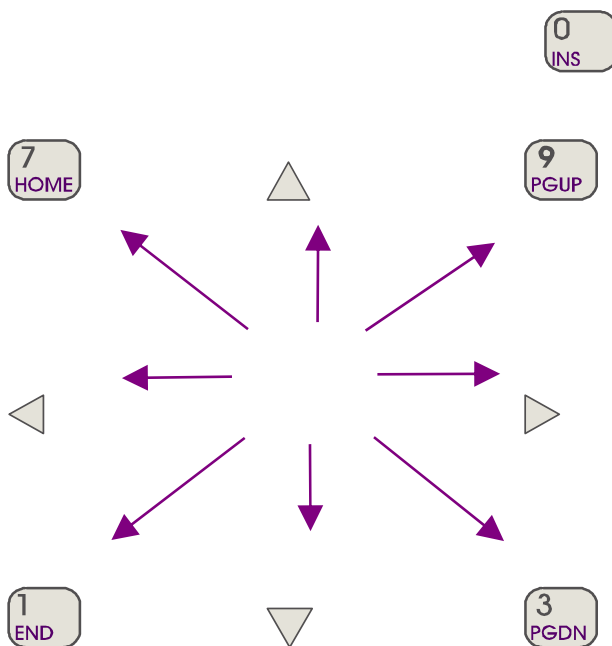




Editing a message

Using keys

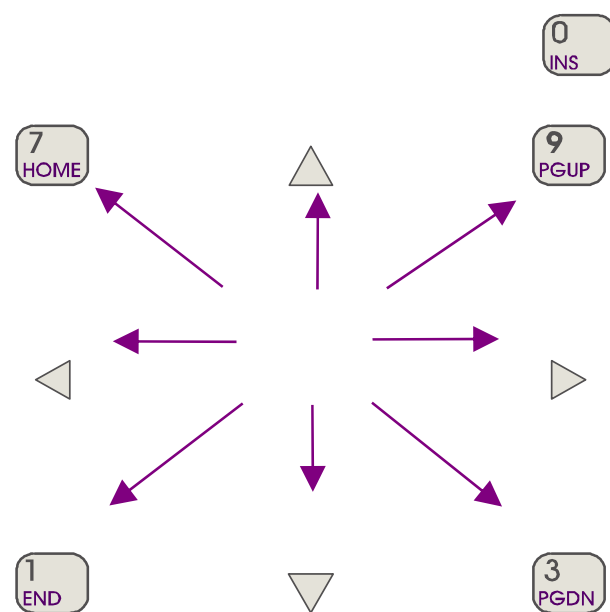
In a dot by dot mode: >>



Changes color of dot on which the cursor is located.

Moves the cursor inside the grid in direction shown by the arrow.

In line mode: -



To select the line color (white or black).

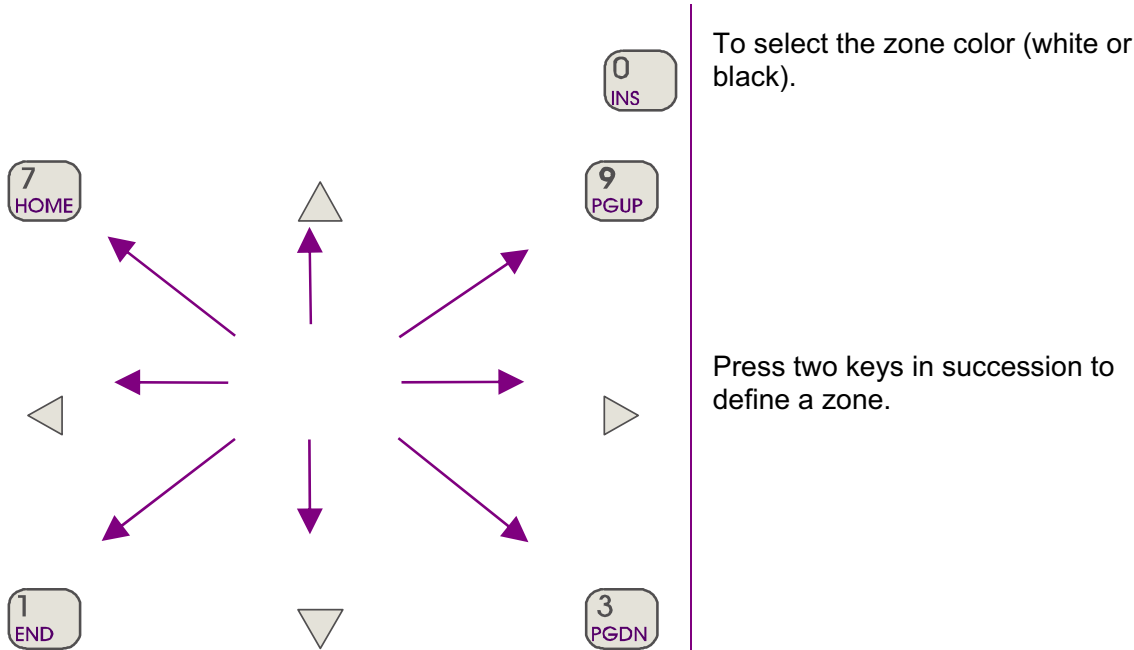
To draw lines in direction shown by the arrow.





Editing a message

In zone mode: ☐



Other functions



To view a symbol in normal size. The symbol is displayed in a window at the top right or top left of the screen, depending on the position of the cursor.



To delete a symbol.

Home



To position the cursor at the bottom left of the screen.



To position the cursor at the top right of the screen.

Zoom



This function can be activated when the cursor is at the bottom left of the screen (coordinate 001 X 001).

To make the grid larger.



To make the grid smaller.



Editing a message



To create a new symbol in a font:

- ☐ Access the font (using the font name or number).
- ☐ Give a number to the new symbol.
- ☐ Draw the symbol.
- ☐ Save.

■ **Save the symbol**

▶ *Symbol editing/Symbol/Save*

Use this command to save the symbol which you have just created or changed.

▶ *Symbol editing/Symbol/Save as*

Use this command to save a modified version of an existing symbol without losing the original.

These commands can only be accessed after using the **New** or **Open** commands.

■ **Close the font**

▶ *Symbol editing/Symbol/Close*

Use this command to exit the font in which you have just created or changed a symbol. The font contents are saved.

■ **Download the font**

▶ *Printer preparation/Initialization/Font(s) downloading*

This function is for transferring a symbol font, which has just been created or changed.

THE FONT MUST BE DOWNLOADED BEFORE IT CAN BE USED IN MESSAGE EDITING MODE.





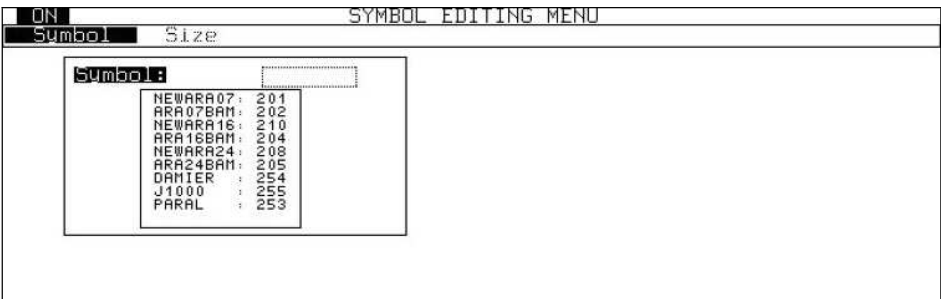
Editing a message

Modify Symbol

■ Modifying the symbol

► Symbol editing/Symbol/Open

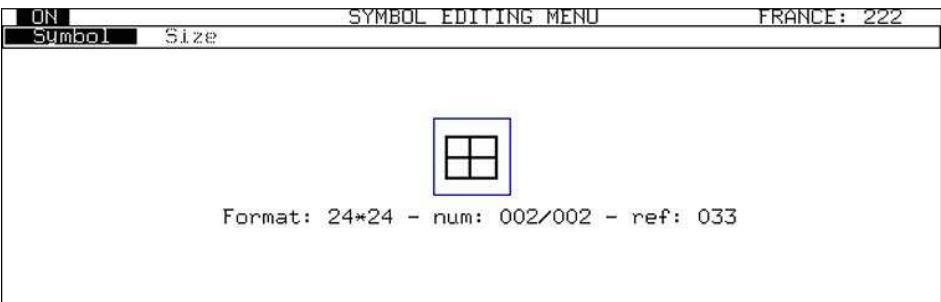
This command allows the user to view and select a symbol in an existing font to modify the associated drawing.



The dialog box shows a list of existing symbol fonts.

Select the one you want or press the  key to bring up the cursor, and enter the title or the number you are looking for and then confirm.

Enter the symbol number and then confirm. The following screen is displayed:



The symbol is displayed on the screen together with the following information:

Format = symbol format: height x width.

num = symbol number within font / number of symbols in the font.

ref = symbol reference in decimal format (reference numbers begin with 32 (\$20)).

Press . You now go to the symbol editing window to make the changes you want.





Editing a message

Using keys



To move forward one symbol (or ten symbols).



To move back one symbol (or ten symbols)

■ Change symbol size

► Symbol editing/Size/Symbol size

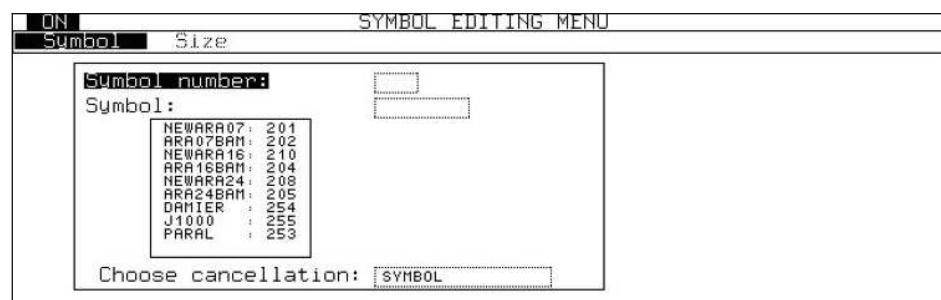
This function allows the user to change the height and the width of symbols contained in the font. It is only accessible in symbol editing mode (via ► Symbol editing/Symbol/**Open**) function.

CAUTION

- If you reduce the size, symbols which already have been drawn, some data may be lost and the symbols will be truncated.
- If you increase the size symbols which have already been drawn, the symbols will be locked to the bottom left of the symbol definition grid.

Delete symbol or font

► Symbol editing/Symbol/Delete



This command offers the user the option to delete a **Symbol** or **Symbol font**.

Select **Symbol** if you just want to delete one symbol.

Select **Symbol font** if you want to delete an entire symbol font.

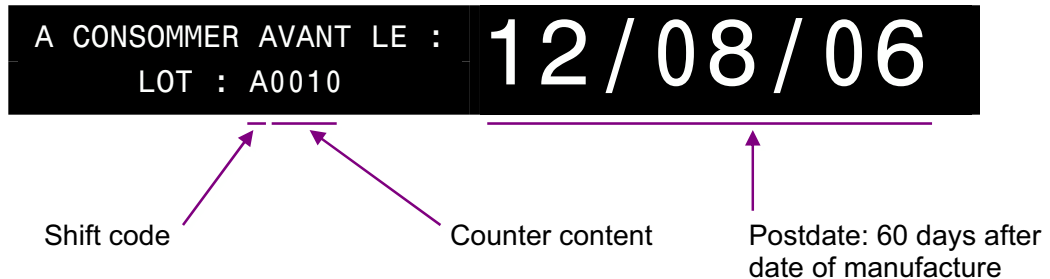




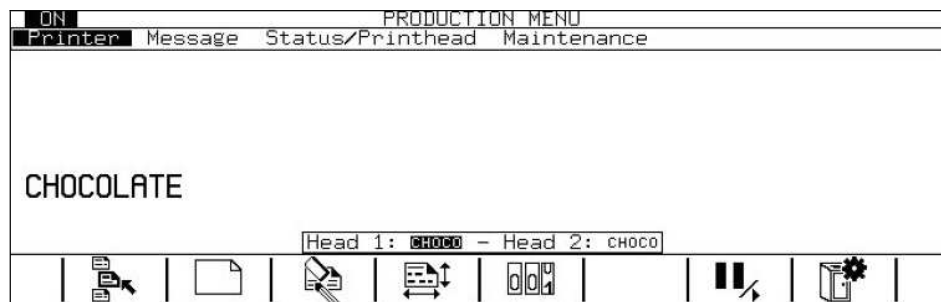
Editing a message

■ Example of message programming

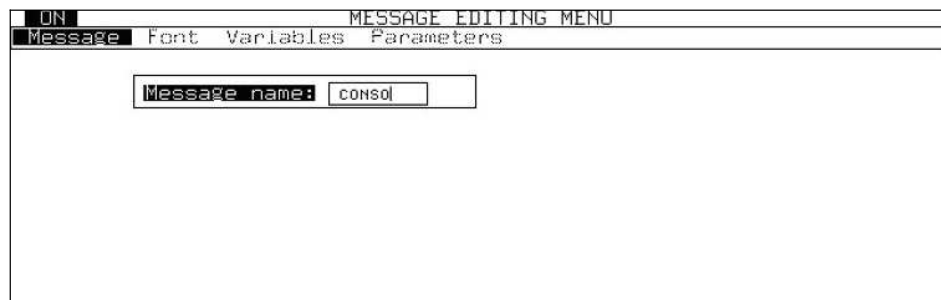
■ Example of message



■ Create message



Press  and enter message name (CONSO in this example).



Press  to confirm.

■ Compose text

Use the arrow keys to position the cursor in the editing area.
Compose the following text using the keyboard:

A CONSOMMER AVANT LE :
LOT:





Editing a message

■ Insert shift code

1- Specify shift code parameters.

Press **Alt** + **P** simultaneously to access the **Parameters** sub-menu and use the arrow keys to select **Shift code**.

ON	MESSAGE EDITING MENU	CONSO
Message	Font	Variables
Parameters		
Message		
Counter		
Counter 2		
Postdate		
Postdate 2		
Shift code		
Barcodes		

A CONSUMMER AVANT LE:
LOT:

Press **ENTER** to confirm.

Enter the following values using the **TAB** key, the arrow keys and the keyboard.

ON	MESSAGE EDITING MENU	CONSO
Message	Font	Variables
Parameters		
Start time: (hh:mn)		
Interval: (hh:mn)		
Type:		

A CONSUMMER AVANT LE:
LOT:

Press **ENTER** to confirm

The shift code values will now be:

- A: from 05.00 to 12.59 (01 for 24-hour format)
- B: from 13.00 to 20.59
- C: from 21.00 to 04.59
- A: from 05.00 to 12.59
- ...and so on.



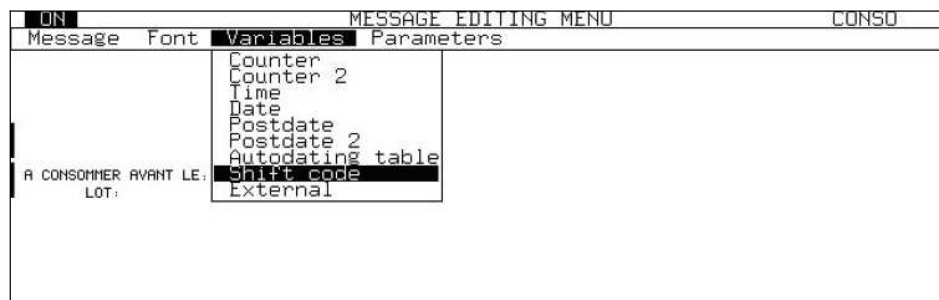


Editing a message

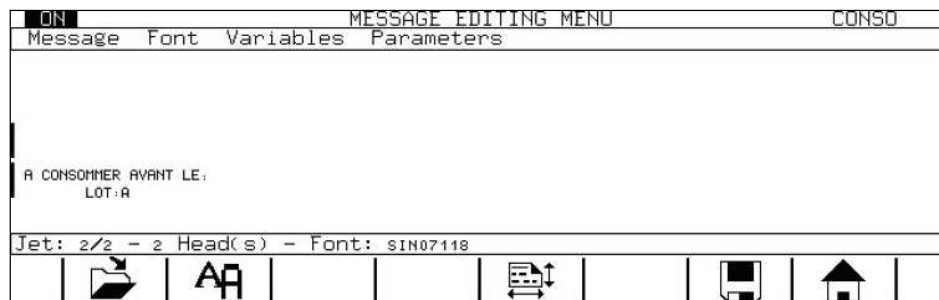
2- Insert shift code in the message.

Use the arrow keys to place the cursor in the position you want.

Press **Alt** + **V** simultaneously to access the **Variables** sub-menu and use the arrow keys to select **Shift code**.



Press **ENTER** to confirm



The shift code is inserted at the cursor position and adopts the format specified in the Parameters sub-menu (A in this example)



Editing a message

■ Insert counter

1- Specify counter parameters.

Press **Alt** + **P** simultaneously to access the **Parameters** sub-menu and use the arrow keys to select **Counter**.

The screenshot shows a terminal window titled "MESSAGE EDITING MENU" with a "CONSO" label in the top right. The menu has four tabs: "Message", "Font", "Variables", and "Parameters". The "Parameters" tab is active, displaying a list of options: "Message", "Counter", "Counter 2", "Postdate", "Postdate 2", "Shift code", and "Barcodes". The "Counter" option is highlighted. In the background, a message is visible: "A CONSOMMEUR AVANT LE: LOT: A".

Press **ENTER** to confirm

Enter the following values using the **TAB** key, the arrow keys and the keyboard.

The screenshot shows the "Counter" parameters screen within the "MESSAGE EDITING MENU". It contains several input fields: "First digit:" (000000010), "Last digit:" (000009999), "Counter step:" (05), and "Batch counter:" (000002). To the right, there are checkboxes for "Incrementation type:" (set to OBJECT), "Leading zeros:" (checked), and "Reinit./top object:" (unchecked). The background message "A CONSOMMEUR AVANT LE: LOT: A" is still visible.

Press **ENTER** to confirm

The counter values will now be:

0010, 0010, 0015, 0015, 0020,.....9995, 9995, 0010...and so on.

NOTE Don't forget to set the counter back to its initial value before the first print job (access using **001**)



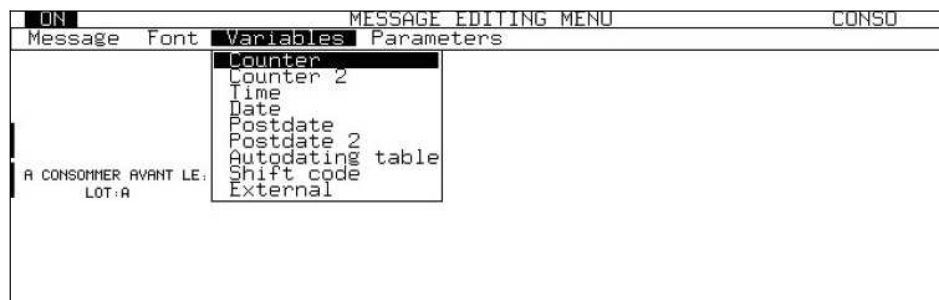


Editing a message

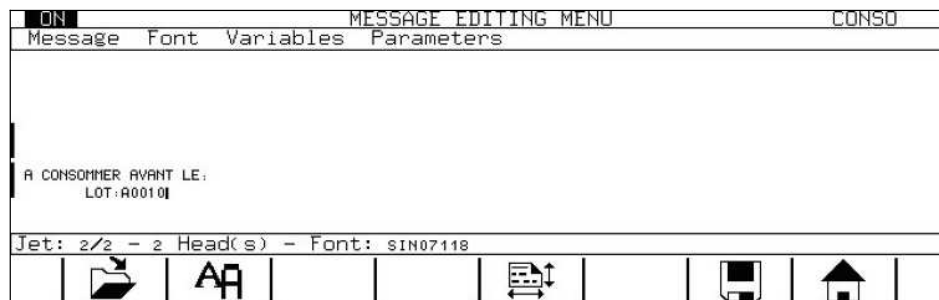
2- Insert counter in the Message.

Use the arrow keys to place the cursor in the position you want.

Press **Alt** + **V** simultaneously to access the **Variables** sub-menu and use the arrow keys to select **Counter**.



Press **ENTER** to confirm



The counter is inserted at the cursor position and adopts the format specified in the Parameters sub-menu (0010 in this example).



Editing a message

■ Select a font

Use the arrow keys to place the cursor in the position you want.

ON	MESSAGE EDITING MENU				CONSO			
Message Font Variables Parameters								
A CONSUMMER AVANT LE: LOT:A0010								
Jet: 2/2 - 2 Head(s) - Font: SIN07118								

Press and select a font (sin24058 in this example).

ON	MESSAGE EDITING MENU				CONSO			
Message Font Variables Parameters								
A CONSUMMER AVANT LE: LOT:A0010								
Jet: 2/2 - 2 Head(s) - Font: SIN24058								
Font selection menu showing a list of fonts (SIN05116, SIN07118, SIN09110, SIN11118, SIN16119, SIN24058) and a preview of the selected font (ABC) in a custom font style.								

Press to confirm

ON	MESSAGE EDITING MENU				CONSO			
Message Font Variables Parameters								
A CONSUMMER AVANT LE: LOT:A0010								
Jet: 2/2 - 2 Head(s) - Font: SIN24058								

The cursor is now larger and the next elements will be inserted with the selected font (24-point font).



Editing a message

■ Insert postdate

1- Specify postdate parameters

Press **Alt** + **P** simultaneously to access the **Parameters** sub-menu and use the arrow keys to select **Postdate**.

ON	MESSAGE EDITING MENU	CONSO
Message	Font	Variables
Parameters		
Message		
Counter		
Counter 2		
Postdate		
Postdate 2		
Shift code		
Barcodes		

A CONSOMMEUR AVANT LE:
LOT: A0010

Press **ENTER** to confirm

Enter the following values using the **TAB** key, the arrow keys and the keyboard.

ON	MESSAGE EDITING MENU	CONSO
Message	Font	Variables
Parameters		
Unit: DAY(S)		
Duration: 60		

A CONSOMMEUR AVANT LE:
LOT: A0010

Press **ENTER** to confirm

NOTE

Remember to update the calendar in the **Printer preparation** menu to set correct date and time in the printer.





Editing a message

2- Compose and insert postdate.

Press **Alt** + **V** simultaneously to access the **Variables** sub-menu and use the arrow keys to select **Postdate**.

ON MESSAGE EDITING MENU CONSO
Message Font Variables Parameters
Counter
Counter 2
Time
Date
Postdate
Postdate 2
Autodating table
Shift code
External
A CONSOMMEUR AVANT LE:
LOT: A0010

Press **ENTER** to confirm

Select the fields you want using the **TAB** key (day, month and year in this example).

ON MESSAGE EDITING MENU CONSO
Message Font Variables Parameters
Post-day month: ☐ dd Post-month year (Figure): ☐ mm
Post-day year: ☐ jji Post-month year (Letter): ☐ mm
Post-week year: ☐ ww Post-year: ☐ yy
Composition: dd/mm/yy
A CONSOMMEUR AVANT LE:
LOT: A0010

Go to the **Composition** input box using the arrow keys and add the separators (/, space, : , -) direct from the keyboard (/ in this example).

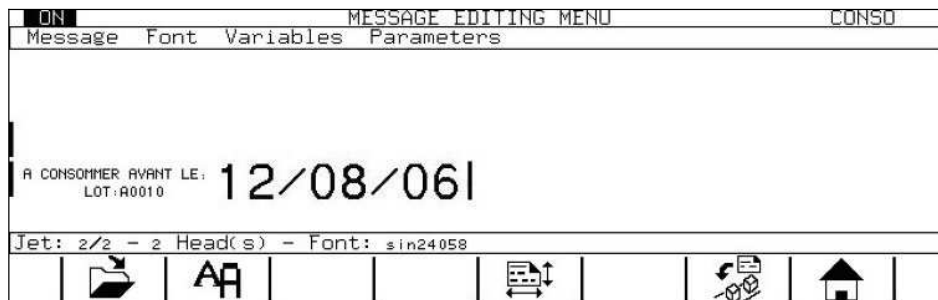
ON MESSAGE EDITING MENU CONSO
Message Font Variables Parameters
Post-day month: ☐ dd Post-month year (Figure): ☐ mm
Post-day year: ☐ jji Post-month year (Letter): ☐ mm
Post-week year: ☐ ww Post-year: ☐ yy
Composition: dd/mm/yy
A CONSOMMEUR AVANT LE:
LOT: A0010

Press **ENTER** to confirm





Editing a message



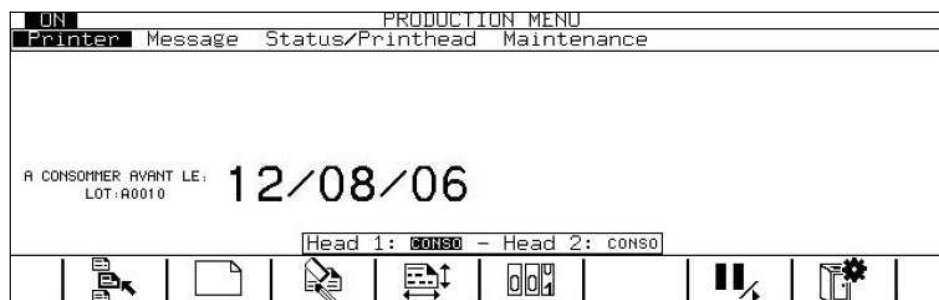
The postdate is inserted with the font selected previously.

REMINDER:

The  icon (change variable composition) and/or the  icon (change variable parameters) are displayed when the cursor is positioned in front of a variable.

■ Load message in printer

Press  to load the message in the printer, press  to return to the **Production** menu.



The message is ready to be printer (in Production mode).



Servicing: 9040, 9040 IP65, 9040S



Servicing: 9040, 9040 IP65, 9040S



Servicing: 9040, 9040 IP65, 9040S



■ Prolonged shutdown

NOTE

Any shutdown can be made into a series of short shutdowns, regardless of length, provided that the printer is started and ran a minimum of twice a week with the jets in a running or refresh mode for at least one hour.

Printer out of service for eight to fifteen days

1. Flush the umbilical conduit and head.

Refer to the procedure for flushing the umbilical/head contained in this section.

Printer out of service for 15 days or longer.

The printer needs to be drained and flushed. This operation can either be performed manually or automatically using the drain/flush unit available from Markem-Imaje.

■ Automatic Drain/Flush

Refer to the automatic printer Drain/Flush procedure contained in this section.

■ Manual Drain/Flush

This operation consists of five stages:

1. Drain the ink circuit
2. Flush the ink circuit
3. Drain the ink circuit
4. Flush the ink circuit
5. Flush the umbilical(s)/head(s).

Refer to the Drain ink circuit, Flush ink circuit and Flush umbilical/head procedures contained in this section.





Servicing: 9040, 9040 IP65, 9040S

■ Start-up following a prolonged shutdown

Starting the printer after a shutdown lasting 8 to 15 days

1. Open gutter located in the print head



2. Start the printer.



3. Perform a STABILITY check, if necessary



Head: 1	Head: 2
Status jet(s): RUNNING	Status jet(s): RUNNING
Speed jet1: JET SHUT DOWN	Speed jet1: 20,00 m/s
Phase jet1: JET START UP	Phase jet1: 00001111
Speed jet2: REFRESHMENT	Speed jet2: 20,00 m/s
Phase jet2: STABILITY	Phase jet2: 00001111
Pressure: 2,89 bars	Motor speed: 1560 t/mn
Viscosity: 29 s / 4,1 cPs	Reference visco.: 29 s / 4,1 cPs
Elect. Temp: 30 °C	Additions: 04
Ink Temperature: 37 °C	FAULTS: ☒

4. Perform a five-minute ink REFRESHMENT routine.

Starting the printer after a shutdown lasting 15 days or longer.

This operation consists of three stages:

1. Drain the ink circuit

Refer to Drain ink circuit procedure contained in this section.

2. Change the main ink filter cartridge.

Refer to "Change ink filter cartridge for 9040, 9040 IP and 9040S printers" procedure contained in the Maintenance section of this manual.

3. Reintroduce new ink to the printer.

Refer to Re-introduce ink procedure contained in this section.





Servicing: 9040, 9040 IP65, 9040S

■ Servicing

Head cleaning

Tools required

- Servicing tray
- Screwdriver, cleaning flask and blower bulb (or drying kit)

NOTE *Cleaning the head once a week is advised to obtain optimal printing performances.*

1. Stop the jet(s)

  /Status Jet(s)/JET SHUT DOWN.

Head:	1
Status jet(s):	RUNNING
Speed jet1:	JET SHUT DOWN
Phase jet1:	JET START UP
Speed jet2:	REFRESHMENT
Phase jet2:	STABILITY
Pressure:	INTRO. SOLUTION
Viscosity:	NOZZLE UNBLOCKING
Elect. Temp:	JET ADJUSTMENT
Ink Temperature:	2,89 bars
	29 s / 4,1 cPs
	30 °C
	37 °C

2. Position the head onto its maintenance holster.

Open the head cover.

Close the gutter screw  located in the print head:



3. Clean the electrodes and the cannon(s) with cleaning solution to remove all dried ink.



Servicing: 9040, 9040 IP65, 9040S



4. Dry carefully.

Use the blower bulb or the drying kit, to thoroughly dry the cleaning solution from all areas of the print head.



5. Open gutter :



Select **JET START UP** to bring the jet(s) back into service.



6. Close the head cover and press



to clear any faults present. It is normal to have a cover fault. Place the head back on its production support bracket.



Servicing: 9040, 9040 IP65, 9040S



3,600-hour service

1. Drain and flush the printer.

See automatic or manual printer Drain/Flush procedures contained in this section.

2. Change main ink filter cartridge. **This operation must be performed at least once every twelve months.**

Refer to procedure for changing 9040, 9040 IP65 and 9040S printer ink filter cartridges contained in the Maintenance section of this manual.

3. Change the pressurization air filter cartridge. **This operation must be performed at least once every six months.**

Refer to procedure for changing 9040, 9040 IP65 and 9040S printer pressurization air filter cartridges contained in the Maintenance section of this manual.

NOTE

We recommend that you run REFRESHMENT function for around 15 minutes every time you finish servicing the ink circuit (i.e. after you drain or flush the circuit or change the filter).

Place an anti-clogging protector between the cannons and the charge electrodes when you perform the refresh routine.



Servicing: 9040, 9040 IP65, 9040S



■ Automatic printer Drain/Flush

This procedure consists of two stages:



■ Flush the recovery gutter manually

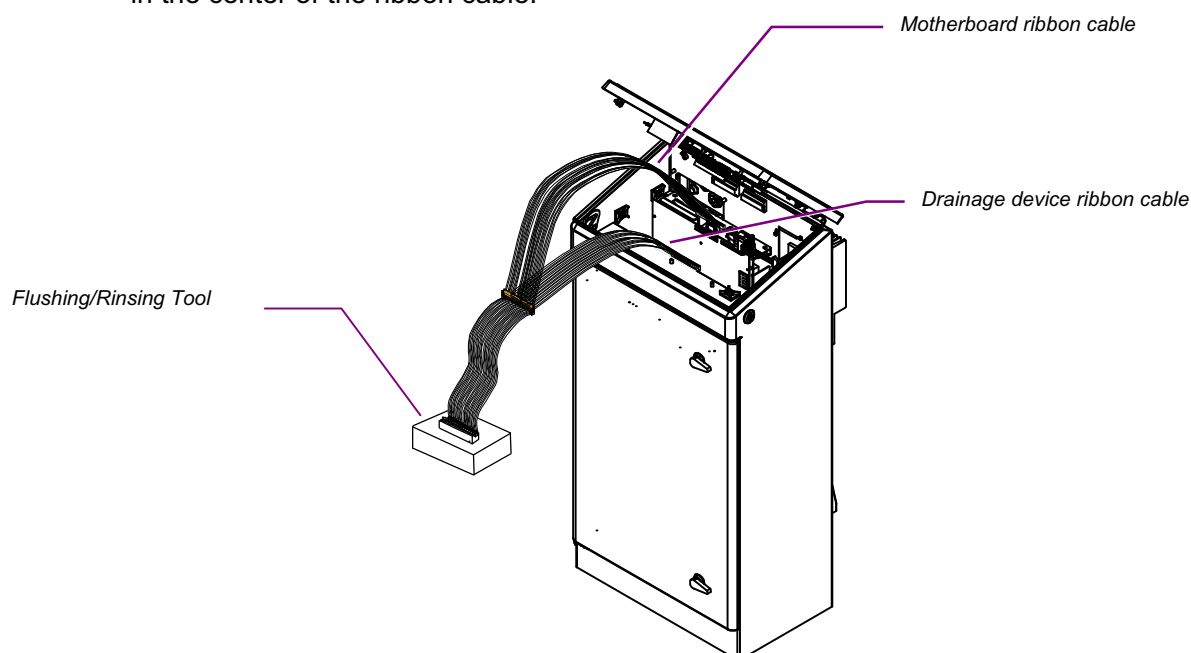
1. Ensure printer in service and jet(s) are stopped and then spray cleaning solution into the recovery gutter(s) for 20 seconds.
2. Shut down the printer normally and disconnect from the main AC supply.
3. Close the gutter(s) and place a clean anti-clogging protector under the nozzle(s)



■ Flush the printer automatically

Disconnect the industrial interface board ribbon cable.

Connect the "drain adapter" ribbon cable between the drain system and the industrial interface board and then connect the main board ribbon to the open connector located on in the center of the ribbon cable.



Servicing: 9040, 9040 IP65, 9040S



1. Disconnect quick-connect self-sealing pressure connector(s) and connect flushing connector(s) (see hydraulic diagram on following page).
2. Connect the drain unit quick-connect connector on the ink circuit pressure outlet and place the second drain unit tube in an empty container to accumulate waste. (minimum quantity of 5 liter container is recommended).
3. Drain the ink tank, the viscometer circuit (the viscometer + the constant-level tube) and the main filter (leave the filter cartridge installed).
4. Pour two liters of additive into the ink tank.
5. Pour two liters of additive into the additive tank.
6. Immerse the free end of the flushing connector into cleaning solution in a clean beaker or into the printer additive tank.
7. Remove, clean and then refit the head filter(s).
8. Start the printer.
9. Select and confirm the ▶ *Production/Maintenance/Flushing* function to start the automatic drain cycle and monitor progress:

ON PRODUCTION MENU			
Printer	Message	Status/Printhead	Maintenance
Motor speed:	1560	Pressure:	2,89
Jet(s) status:	RUNNING		
Flushing phase:	A / V		
Operation:	Head(s) refreshment for 60 s		

Several cleaning, flushing and draining operations are performed in succession before the process ends automatically. Wait for the printer to shut down when the flushing cycles are completed.

10. Disconnect the printer from the main AC supply . Restore all hydraulic connectors to their original condition.

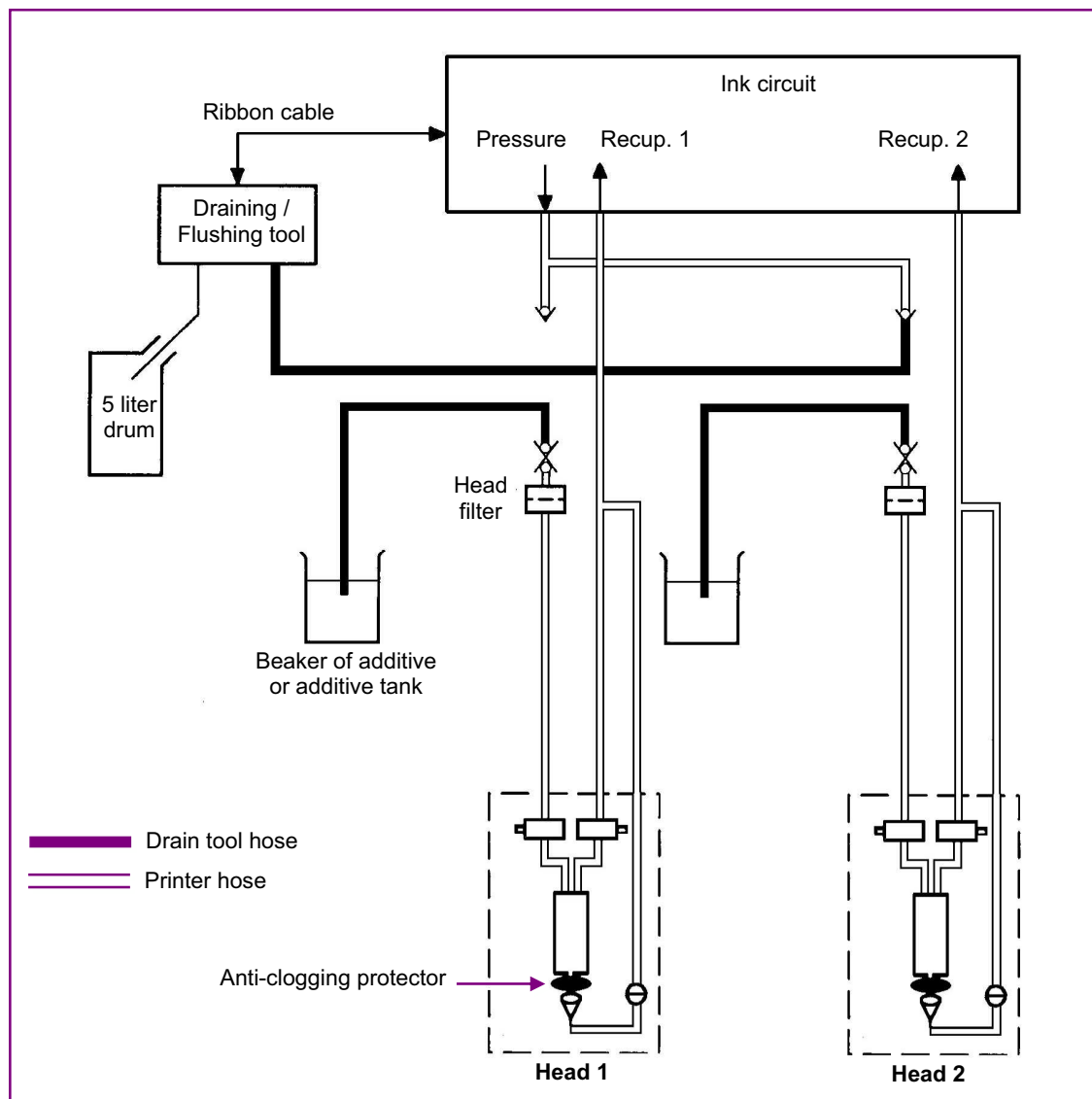
Disconnect the drain unit ribbon cable from the industrial interface. Disconnect the printers ribbon cable from the drain unit ribbon cable and reconnect to the printer industrial interface board.



Servicing: 9040, 9040 IP65, 9040S



Hydraulic diagram



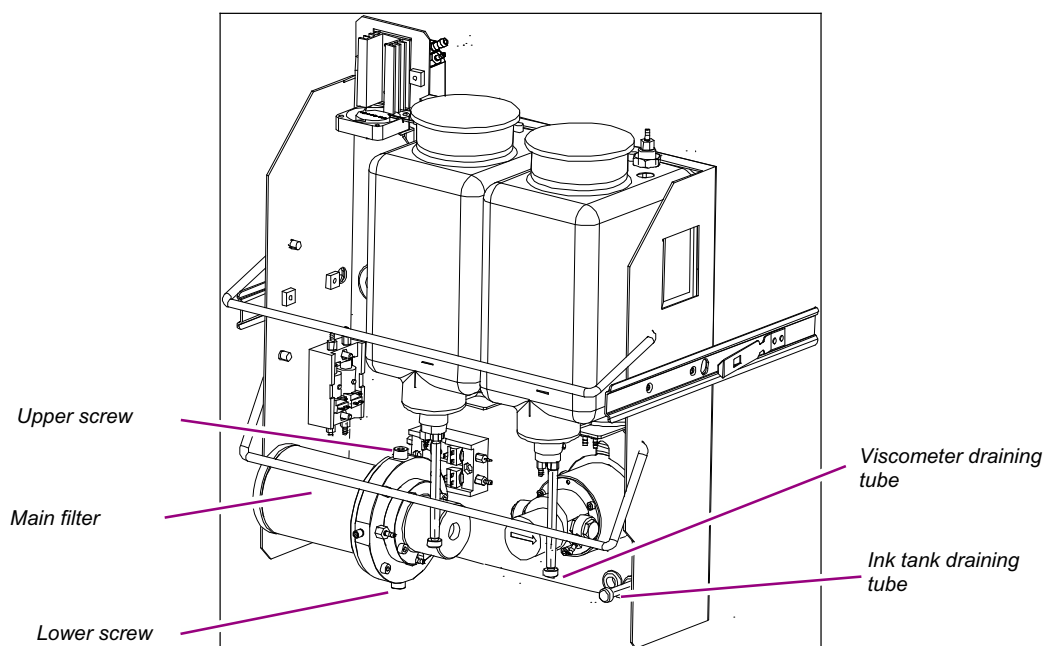


■ Drain the ink circuit

Tools required :

- Recovery tank
- 3 mm Allen key.

1. Shut down the printer normally and disconnect from main AC power supply.
2. Place a recovery container under the ink tank and remove the drain plug to drain. **The spent ink should then be stored in a closed container and must not be re-used.**
3. Refit the drain plug.
4. Drain the viscometer in the same way by removing the drain plug to the viscometer circuit.
5. Place a recovery container under the main filter. Drain the main filter by first undoing the lower drain screw and then the upper drain screw using the 3 mm Allen key. Keep the O-rings associated with the screws in a safe place. Wait until liquid stops flowing.



6. If the ink circuit is to be flushed after draining:

Using the cleaning flask, splash solution inside the ink tank to remove as much ink as possible from the strainer at the bottom of the tank and from the inside of the constant-level tube. Drain solution from the tank as described in step two of this procedure.

7. Refit the upper screw first and then fit the lower screw, ensuring that the O-rings are fit to the screws.

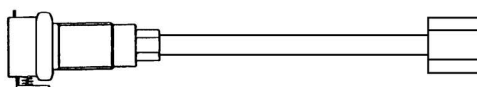
Servicing: 9040, 9040 IP65, 9040S



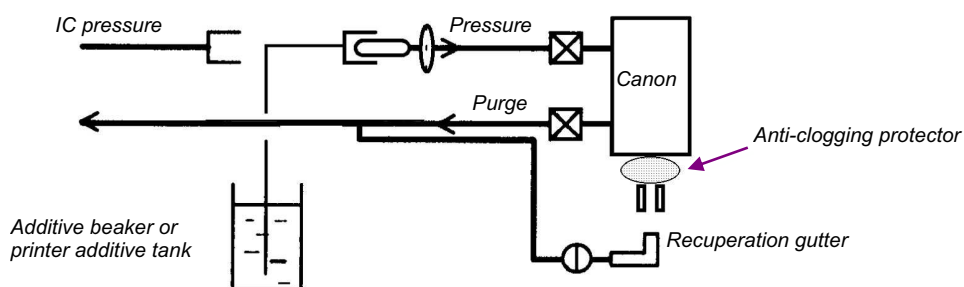
■ Flush the umbilical conduit and the head

This procedure is used for circulating clean additive in the print head head and umbilical tubing.

1. Ensure printer is in a running condition with the jet(s) stopped. Spray additive into the recovery gutter for 20 seconds.
2. Shut down the printer normally.
3. Close the recovery gutter screw in the print head.
4. Disconnect the pressure connector inside the hydraulic compartment.
NOTE: DISCONNECT BOTH PRESSURE CONNECTORS ON TWO-HEAD PRINTERS.
5. Connect flushing connector (1) to the umbilical pressure line by way of the head filter.



6. Immerse the free end of the flushing connector into a beaker of additive or into the printer additive tank.



7. Plug the nozzle(s) using an anti-clogging protector.



Servicing: 9040, 9040 IP65, 9040S



8. Start the printer and press the  key.

Head: 1	Head: 2
Status jet(s): RUNNING	Status jet(s): RUNNING
Speed jet1: JET SHUT DOWN	Speed jet1: 20,00 m/s
Phase jet1: JET START UP	Phase jet1: 00001111
Speed jet2: REFRESHMENT	Speed jet2: 20,00 m/s
Phase jet2: STABILITY	Phase jet2: 00001111
Pressure: 2,89 bars	Motor speed: 1560 t/mn
Viscosity: 29 s / 4,1 cPs	Reference visco.: 29 s / 4,1 cPs
Elect. Temp: 30 °C	Additions: 04
Ink Temperature: 37 °C	FAULTS: 

Run the REFRESHMENT function for a minimum of 30 seconds (on each corresponding head for two-head printers).

9. Run the NOZZLE UNBLOCKING function for a minimum of 20 seconds.

10. On two-head printers, flush the second head before proceeding to the next step. Stop the printer normally and wait for the system to shut down completely.

11. Restore hydraulic connections to their original positions and remove the flushing connector (1).

■ Flush the ink circuit

Tools required:

- ☐ Recovery tank
- ☐ 3 mm Allen key.

1. Refit the drain plugs.

2. Pour one liter of cleaning solution into the ink tank.

3. Start up the printer normally, stopping the jet(s).

4. Perform the ink REFRESHMENT procedure for a minimum of 20 minutes.



Servicing: 9040, 9040 IP65, 9040S



■ Re-introducing ink into the printer

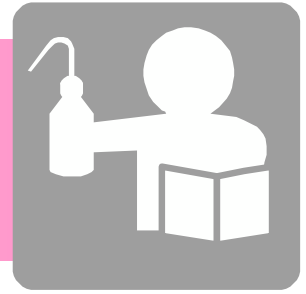
CAUTION Check consumable expiration date shown on the ink containers label.

1. Check that the drain plugs and bleed screws are in place.
2. Remove the ink tank lid and pour 1 liter of new ink into the ink tank.
3. Remove the additive tank lid and confirm or fill to the ½ way level mark on the tank.
4. Start the printer and make sure that the jet is present and stable within the gutter.
5. Check pressure: 

Head: 1	Head: 2
Status jet(s): RUNNING	Status jet(s): RUNNING
Speed jet1: JET SHUT DOWN	Speed jet1: 20,00 m/s
Phase jet1: JET START UP	Phase jet1: 00001111
Speed jet2: REFRESHMENT	Speed jet2: 20,00 m/s
Phase jet2: STABILITY	Phase jet2: 00001111
Pressure: 2,89 bars	Motor speed: 1560 t/mn
Viscosity: 29 s / 4,1 cPs	Reference visco.: 29 s / 4,1 cPs
Elect. Temp: 30 °C	Additions: 04
Ink Temperature: 37 °C	FAULTS: ☒

6. Perform STABILITY check, if necessary.
7. Perform five-minute ink REFRESHMENT routine.
8. Clean and dry print head.
9. Start jet for normal production and ensure no faults are present.





Servicing: 9040 Contrast



Servicing: 9040 Contrast



Servicing: 9040 Contrast



■ Prolonged shutdown

CAUTION

Always disconnect the printer from the main AC supply after draining and flushing if you are not going to re-introduce ink immediately. This is to avoid having the stirrers rotating with no fluids in the ink/solvent tanks.

Drain and rinse the printer before any work, which requires disconnection from the main AC supply for more than two hours.

Shutting down the printer for between 2 hours and 4 days

1. Stop the jet(s) and place the head(s) on it's the maintenance holster.



2. Open the head cover.

3. Spray cleaning solution into the recovery gutter for a few seconds.



4. Shut down the printer.



5. Close the gutter (after the printer is shut down completely).



6. Place the anti-clogging device under the nozzle(s), if necessary (see the IRS – Ink Running Specification/technical data sheet for your ink type).



7. Close the head cover.



Servicing: 9040 Contrast



Printer out of service for four or more days

1. Drain and flush.

Refer to Printer drain/flush procedure contained in this section.

CAUTION

***It is recommended to** repeat the Drain/Flush procedure every four weeks if the printer is to be out of service for longer than a month.*



Servicing: 9040 Contrast



■ Start-up following a prolonged shutdown

Restarting the printer after a shutdown lasting between 2 hours and 4 days

1. Open the head cover.
2. Remove the anti-clogging device from under the nozzle(s) (if present).
3. Clean the print head.
4. Open gutter.
5. Start the printer with the cover open. Start the jet(s) if they don't start automatically.
6. Close the cover when the jets have started and place the head on its production support bracket.



Starting the printer after it has been out of service for four or more days

1. Change the main ink filter cartridge if the printer has been shut down for longer than 15 days.
Refer to the procedure for changing 9040 Contrast printer ink filter cartridges contained in the Maintenance section of this manual.
2. Pour half a liter of new ink into the ink tank.
3. Start the printer normally and leave in standard operation with jet(s) running for a minimum of thirty minutes.



CAUTION

Do not place additive in the additive tank until you have checked that the ink viscosity reading is within the specification for your ink.



Servicing: 9040 Contrast



4. Check the viscosity.



Head:	1
Status jet(s):	RUNNING
Speed jet1:	20,00 m/s
Phase jet1:	00001111
Pressure:	2,89 bars
Viscosity:	29 s /
Elect. Temp:	30 °C
Transfer:	0013 s
Reference visco.:	29 s / 2,9 cPs
Additions:	04
FAULTS:	✉

□ If the value is below **"Reference visco. :"**

Shut down the printer normally and empty the recovery tank.
Then pour half a liter of fresh ink into the ink tank.
Then restart the printer normally.

□ If the value is above **"Reference visco. :"**

Pour a liter of additive into the additive tank.

Then restart the printer normally.

Allow the printer to run as the viscosity management system will correct itself automatically.





Servicing: 9040 Contrast

■ Servicing

Clean the head

Tools required

- Servicing tray
- Screwdriver, cleaning flask and blower bulb (or drying kit)

NOTE *Cleaning the head once a week is advised to obtain optimal printing performances.*

1. Stop the jet(s)



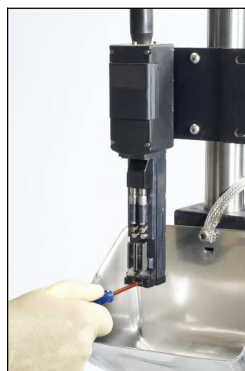
/Jet status/**STOPPED**.

Head:	1
Status jet(s):	RUNNING
Speed jet1:	20,00 m/s
Phase jet1:	00001111
Pressure:	2,89 bars
Viscosity:	29 s /
Elect. Temp:	30 °C

2. Position the head onto its maintenance holster.

Open the head cover.

Close the gutter screw
located in the print head:



3. Clean the electrodes and the cannon(s) with cleaning solution to remove all dried ink.



Servicing: 9040 Contrast



4. Dry carefully.

Use the blower bulb or the drying kit, to thoroughly dry the cleaning solution from all areas of the print head .



5. Open gutter :



Select **JET START UP** to bring the jet(s) back into service.



6. Close the head cover and press



to clear any faults present. It is normal to have a cover fault. Place the head back on its production support bracket.



Servicing: 9040 Contrast



2,000-hour service

1. Drain and flush the printer.

Refer to printer Drain/Flush procedure contained in this section.

2. Change the main ink filter cartridge. **This operation must be performed at least once every six months.** Refer to the procedure for changing 9040 Contrast printer ink filter cartridges contained in the Maintenance section of this manual.

3. Change the coalescence filters. Refer to the procedure for changing 9040 Contrast printer coalescence filters contained in the Maintenance section of this manual.

4. Empty the recovery tank.

5. Pour a liter of new ink into the ink tank.

6. Pour a liter of additive into the additive tank.

7. Start the printer normally and leave in operation with jet running for a minimum of thirty minutes.

CAUTION

We recommend that you run the REFRESHMENT function for around 15 minutes every time you finish servicing the ink circuit (i.e. after you drain or flush the circuit or change the filter).

Place an anti-clogging protector between the cannons and the charge electrodes when you perform the refresh routine.





Servicing: 9040 Contrast

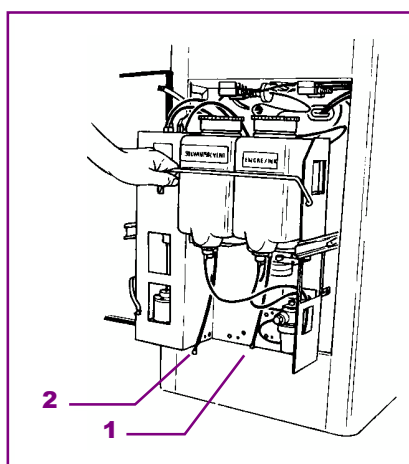
■ Drain/flush printer

CAUTION

Disconnect the printer from the main AC supply after each drain/flush operation - unless ink is going to be introduced immediately. This is to avoid having the stirrers rotating with no fluids in the system.

Drain and rinse the printer before any work, which requires disconnection from the main AC supply for more than two hours.

1. Place a recovery container under the additive tank and remove the drain plug from the additive drain tube.
2. Refit the additive drain plug when the tank is empty.
3. Pour flushing solution into the additive tank. **Use one liter if you plan to take the printer out of service for less than 15 days or two liters if the shutdown is expected to be longer than fifteen days.**
4. Place a recovery container under the ink tank and remove the ink tank drain plug from the ink tank drain tube.



- | | |
|----------|--------------------------|
| 1 | Ink tank drain tube |
| 2 | Additive tank drain tube |

NOTE

Never re-use this ink.



Servicing: 9040 Contrast



5. Select and confirm the ▶ *Production/Maintenance/Flushing* function to start the automatic drain cycle and monitor the progress.

The flushing solution will circulate inside all parts of the ink circuit and is then drained via the ink tank. Draining stops and the printer shuts off automatically when the additive tank is empty, the flushing cycles are now complete

6. Close the recovery gutter screw in the print head.



7. Clean the printhead



8. Place an anti-clogging device under the nozzles if required.



9. Fit the drain plug back on the ink tank drain tube.







Maintenance





Maintenance





Maintenance

■ Stopping and starting jets

The default setting is for the jet(s) to be started and stopped automatically.

Jet start-up

 (▶ Production/Status/Printhead/**Status jet(s)**)

Head:	1	Head:	2
Status jet(s):	RUNNING	Status jet(s):	RUNNING
Speed jet1:	20,00 m/s	Speed jet1:	20,00 m/s
Phase jet1:	00001111	Phase jet1:	
Speed jet2:	20,00 m/s	Speed jet2:	20,00 m/s
Phase jet2:	00001111	Phase jet2:	00001111
Pressure:	2,89 bars	Motor speed:	1560 t/mn
Viscosity:	29 s / 4,1 cPs	Reference visco.:	29 s / 4,1 cPs
Elect. Temp:	30 °C	Additions:	04
Ink Temperature:	37 °C	FAULTS:	

Select and confirm **ON** command.

Each head is started separately on a two-headed printer.

The  HEAD 1 (and  HEAD 2) indicators go on when the jet(s) are ready (steady light).

NOTE The ▶ Production/Printer/**Jet(s) start-up** command allows you to start all jets (on all heads).

Start mode settings

▶ Production/Printer/**Start mode**

This function is used to choose whether all jets are to be started in **Automatic** or **Manual** mode when the printer started normally.





Maintenance

Jet shut-down



(▶ *Production/Status/Printhead/Status jet(s)*)

Select and validate **OFF** command.

Each head is shut down separately a two-headed printer.



The (and ) indicator lights go off when the jets are shut down.

NOTE

*The ▶ **Production/Printer/Jet(s) stop** command allows you to stop all jets (on all heads).*





Maintenance

■ Jet maintenance

Starting problems



A number of functions are available for restoring the jet(s) to good working order if the jet(s) will not start correctly (no jet or deviated). Follow the instructions on the screen for each of these functions.

Ensure that the head is positioned onto its maintenance holster and the cover is removed.

1. Stop the jet(s).



Head: 1	Head: 2
Status jet(s): RUNNING	Status jet(s): RUNNING
Speed jet1: JET SHUT DOWN	Speed jet1: 20,00 m/s
Phase jet1: JET START UP	Phase jet1: 00001111
Speed jet2: REFRESHMENT	Speed jet2: 20,00 m/s
Phase jet2: STABILITY	Phase jet2: 00001111
Pressure: 2,89 bars	Motor speed: 1560 t/mn
Viscosity: 29 s / 4,1 cPs	Reference visco.: 29 s / 4,1 cPs
Elect. Temp: 30 °C	Additions: 04
Ink Temperature: 37 °C	FAULTS: [icon]

2. Close the recovery gutter screw in the print head.



3. Select and confirm: **NOZZLE UNBLOCKING**

Using the squirt bottle, apply cleaning solution to the cannon until ink flows through the nozzle.



If the jet is in the gutter, move on to step **5**. Otherwise, go to step **6**.



4. Select and confirm: **INTRO. SOLUTION**

Using the squire bottle, allow cleaning solution to run along the cannon for around 20 seconds.





Maintenance

5. Open gutter screw.



6. Select and confirm: **STABILITY**

7. When the jet is stable in the gutter, select and confirm **JET SHUT DOWN**.



8. Clean the print head thoroughly.



9. Select and confirm **JET START UP** to restart the jet(s).

Make a visual check to ensure jet(s) are in the gutter.



Close the head cover again and press  to clear fault conditions.

NOTE

In some cases, these three functions can be used individually or may need to be repeated two or three times.

Before making adjustments



/Status jet(s)/**JET ADJUSTMENT**

This function starts up the jet(s) and overrides faults associated with the jet(s). This means that fault conditions will not prevent you from making adjustments.





Maintenance

Align jets

► Printer preparation/Initialization/Jet alignment

PRINTER PREPARATION MENU

ON Initialization Parameters Options Access codes

Jet number: 1.1

Alignment: 0

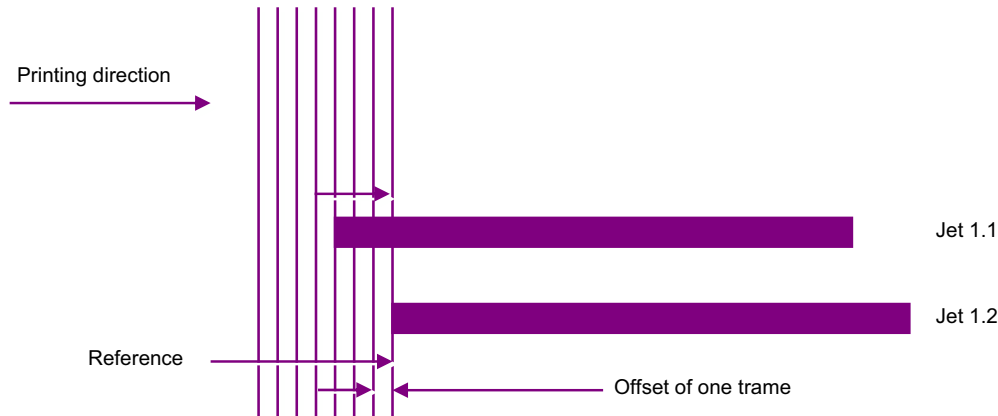
- +

VALID

This function aligns output from the jet(s). Alignment consists of identifying the jet that is the slowest and assigning corresponding delay settings to the other jets.

Select a **Jet number** and then enter a number of **Alignment** units or adjust alignment using the + and - buttons.

Example: Two-jet head



Jet 1.2 is the slowest jet. Jet 1.1 therefore needs to be delayed by three units to bring it into alignment with reference jet 1.2.

CAUTION

Make sure you have established the direction of printing before you identify the reference jet.





Maintenance

Adjust jet in gutter

Tools required:

- ☐ Cannon positioning tool, open-ended wrench.
- ☐ Bifocal magnifier (eyecup type).
- ☐ Head cleaning material
- ☐ Allen key (1.5 mm)
- ☐ Tweezers

■ Before you start

1. Position the head onto the maintenance holster.



Head: 1	Head: 2
Status jet(s): RUNNING	Status jet(s): RUNNING
Speed jet1: JET SHUT DOWN	Speed jet1: 20,00 m/s
Phase jet1: JET START UP	Phase jet1: 00001111
Speed jet2: REFRESHMENT	Speed jet2: 20,00 m/s
Phase jet2: STABILITY	Phase jet2: 00001111
Pressure: 2,89 bars	Motor speed: 1560 t/mn
Viscosity: 29 s / 4,1 cPs	Reference visco.: 29 s / 4,1 cPs
Elect. Temp: 30 °C	Additions: 04
Ink Temperature: 37 °C	FAULTS:

Select and confirm **STABILITY** function to ensure jet(s) are stable.

3. Select and confirm the **JET ADJUSTMENT** function.

4. Make sure that the jet(s) recovery system is operating correctly.(Vacuum)

■ Adjustment

The adjustment process includes three inter-connected settings:

- ☐ cannon rotation,
- ☐ upper eccentric rotation,
- ☐ lower eccentric rotation.

This procedure must not be rushed, and it may be necessary to stop the jet(s) from time to time to clean the electrodes.





Maintenance

5. Remove the protective covering from the resonator wiring and disconnect the wires so they do not become tangled or damaged during this operation.
6. Loosen the adjustment screws on the cannon-holder (see figure 1).
7. Bring the jet close to point A or point A' by rotating the cannon in the cannon holder using a positioning tool at the top (see figure 2).

CAUTION Rotate in the direction shown on the diagram to avoid unscrewing the fastening nut on the cannon.

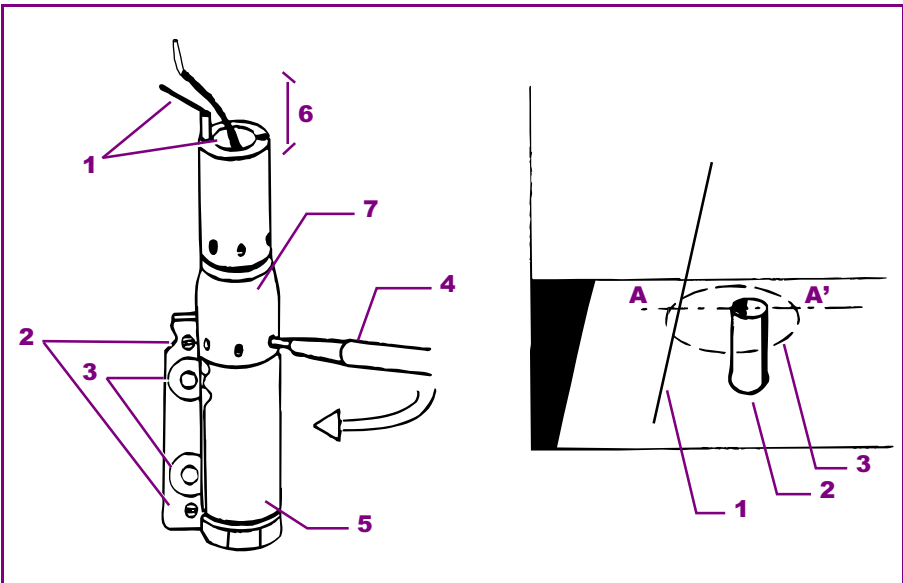


Figure 1

Figure 2

Figure 1: Preliminary cannon adjustment

- | | |
|----------|------------------------------|
| 1 | Wires to be disconnected |
| 2 | Eccentrics |
| 3 | Adjustment screws |
| 4 | Position tool |
| 5 | Cannon holder |
| 6 | Location of protective cover |
| 7 | Cannon |

Figure 2 : Preliminary adjustment of jet in gutter

- | | |
|----------|---------------------------------------|
| 1 | Jet |
| 2 | Gutter |
| 3 | Jet trajectory while cannon is turned |



Maintenance

8. Use the lower eccentric to move the jet to the center of the charge electrode. Check visually (see figure 3).

CAUTION *Do not apply excessive force to the eccentrics. Adjustment screws should be snug to hold cannon holder securely and to allow easy movement when adjusting.*

9. Use the upper eccentric to position the jet in the gutter. The jet should be:

- in the center of the gutter for G and M heads (see figure 4),
- off-center (1/3 - 2/3) for P heads (see figure 5).

10. Repeat steps 7, 8 or 9 until the jet is correctly positioned in the gutter and is at the center of the charge electrode.

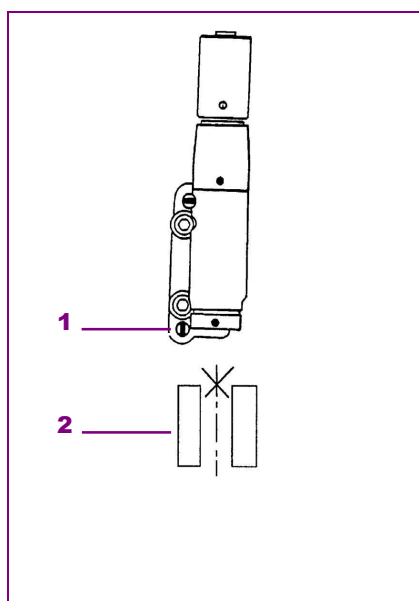


Figure 3

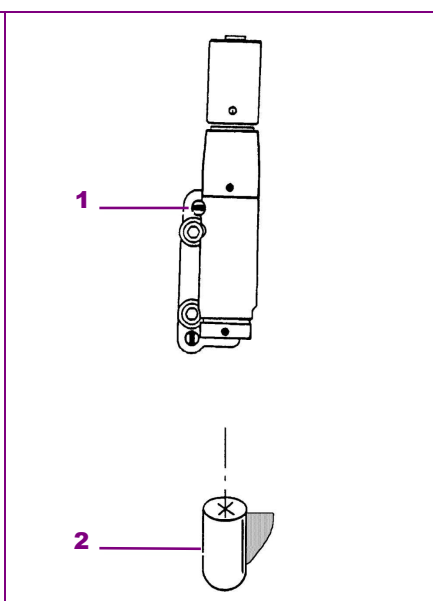


Figure 4

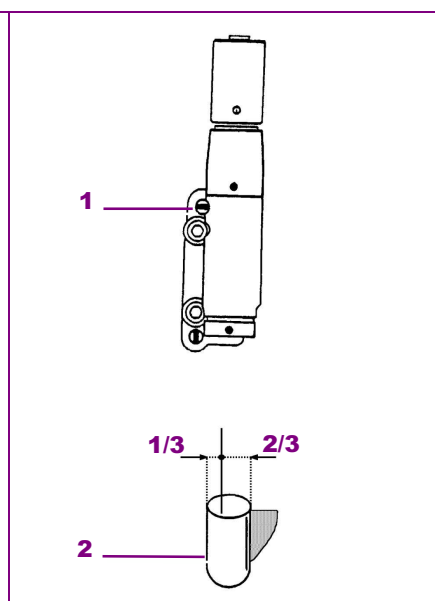


Figure 5

Figure 3 : G, M and P heads: Centering the jet in the charge electrode

- 1** Lower eccentric
2 Charge electrode

Figure 4: G and M heads: Centering the jet in the gutter

- 1** Upper eccentric
2 Recovery gutter

Figure 5 : P head: Centering the jet in the gutter

- 1** Upper eccentric
2 Recovery gutter



■ Final steps

11. Tighten the two adjustment screws on the cannon holder, without using excessive force.

12. Stop the jet(s) (**JET SHUT DOWN**). Clean the head thoroughly and reconnect the resonator wires.

Reinstall the protective cover and.

13. Start the jet(s) (**JET START UP**).

14. Check break-off point and adjust if necessary.

Fit the head cover back on.

15. Press  to clear any faults. Run continuous print tests.
Ensure the electrodes and the gutter are clean after the printer has been in service for ten minutes.

CAUTION

On multi-jet heads, the jets have to be adjusted in relation to each other to ensure that the frames join up correctly. Print tests are the only way to make fine adjustments. See Align Jets instruction in this section.



Maintenance

Adjust break-off point

Tools required:

- Magnifier (eyecup type)
- Allen key (2.5 mm)

■ Before you start

NOTE It is important when making this adjustment that the print head height is relative to the production height of the print head.

1. Position the head onto the maintenance holster.
2. Start the jet(s) and leave them running for at least 30 minutes.
3. Remove the upper cover and the head cover.

With multi-jet heads, each jet has its own potentiometer (the right-hand pot is for the right jet, and so on).

■ Procedures

4. The following adjustment is made using the magnifying loop. Look at the jet in front of the charge electrode (strobe LED) (see figure 1):

- Start by turning the adjustment screw counter-clockwise as far as it will go. The jet will now be a continuous stream.
- Gently turn the adjustment screw clockwise until the jet break-off point is located in the center of the charge electrode. The break point is correct when you have three full drops counting from the base of the electrode.

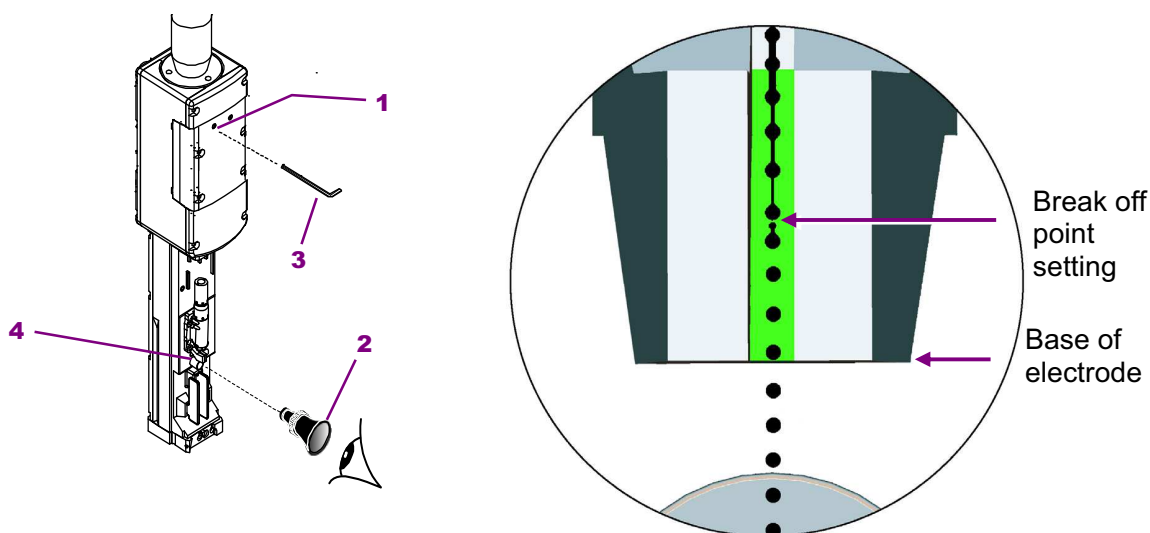


Figure 1

1	Setting screw
2	Magnifier (eyecup type)
3	Allen key
4	Charge electrode



Maintenance



- The shape of the drops immediately under the break-off point provides the only means of establishing that the setting is correct.

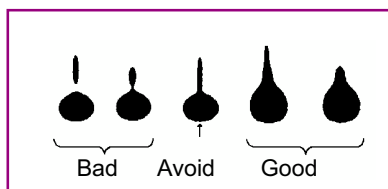


Figure 2

CAUTION

Treat the adjustment screw with care when making adjustments to avoid damage.

■ Final steps

5. Close the head cover. Press  to clear any faults.
6. Run print tests, repeat the adjustment procedure, if necessary.





Maintenance

- Adjust pressure pump motor speed: 9040 - 9040 IP65 - 9040_s

Tools required:

- Allen key or screwdriver.

The motor rotation speed essentially depends on the viscosity of the ink. The by-pass should therefore only be adjusted if the ink viscosity is correct (i.e. when the viscosity measured by the printer is within one second of the reference viscosity value).

■ Before you start



Measured and reference viscosity values are displayed on the printer screen.

Head: 1		Head: 2	
Status jet(s):	RUNNING	Status jet(s):	RUNNING
Speed jet1:	JET SHUT DOWN	Speed jet1:	20,00 m/s
Phase jet1:	JET START UP	Phase jet1:	00001111
Speed jet2:	REFRESHMENT	Speed jet2:	20,00 m/s
Phase jet2:	STABILITY	Phase jet2:	00001111
Pressure:	2,89 bars	Motor speed:	1560 t/mn
Viscosity:	29 s / 4,1 cPs	Reference visco.:	29 s / 4,1 cPs
Elect. Temp:	30 °C	Additions:	04
Ink Temperature:	37 °C	FAULTS:	✉





Maintenance

■ Adjustment

1. Start the jets (**JET START UP**), once Jets are in a Ready mode, check motor the speed.
2. Pull the ink circuit out to the end of the rails. Insert an Allen key or small screwdriver into recess (3) of the pressure pump- depending on pump model.
3. Turn the tool half a turn either clockwise (decrease motor speed) or counterclockwise (increase motor speed) and wait for the motor speed value to change on the printer cabinet screen and stabilize. Gradually adjust until the motor speed is 2000 rpm (to nearest 50 rpm).

NOTE

You may have to make this adjustment after changing the main ink filter cartridge.

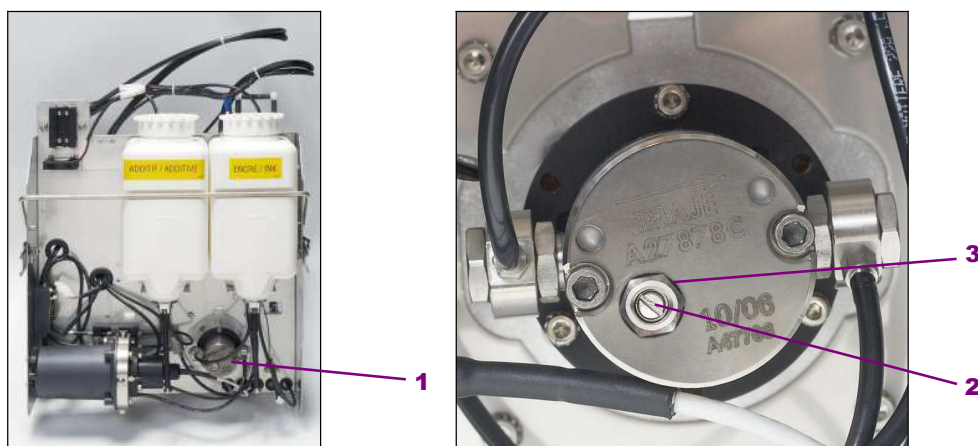


Figure 1

1	Pressure pump
2	By-pass adjustment
3	Seal screw (Caution: Do not unscrew)



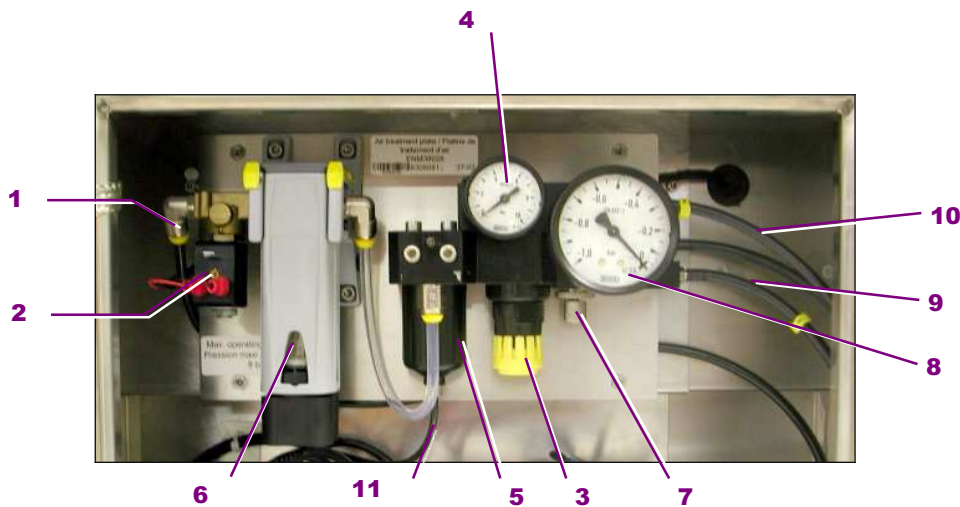
Maintenance



■ Plant air kit settings: 9040 Contrast

The plant air kit is connected to the customers compressed air supply and provides air for the 9040 Contrast printer. Filters are used to make sure that the air delivered to the printer is clean of moisture, oil and deposits.

Layout of components



1	<i>Plant air connection</i>	7	<i>Flow limiter (to set vacuum pressure)</i>
2	<i>Electrovalve</i>	8	<i>Vacuum gauge</i>
3	<i>Pressure regulator</i>	9	<i>Vacuum line</i>
4	<i>Pressure gauge</i>	10	<i>Pressure tube</i>
5	<i>Filter (5 µ)</i>	11	<i>Exhaust</i>
6	<i>Filter (0.03 µ)</i>		

Characteristics

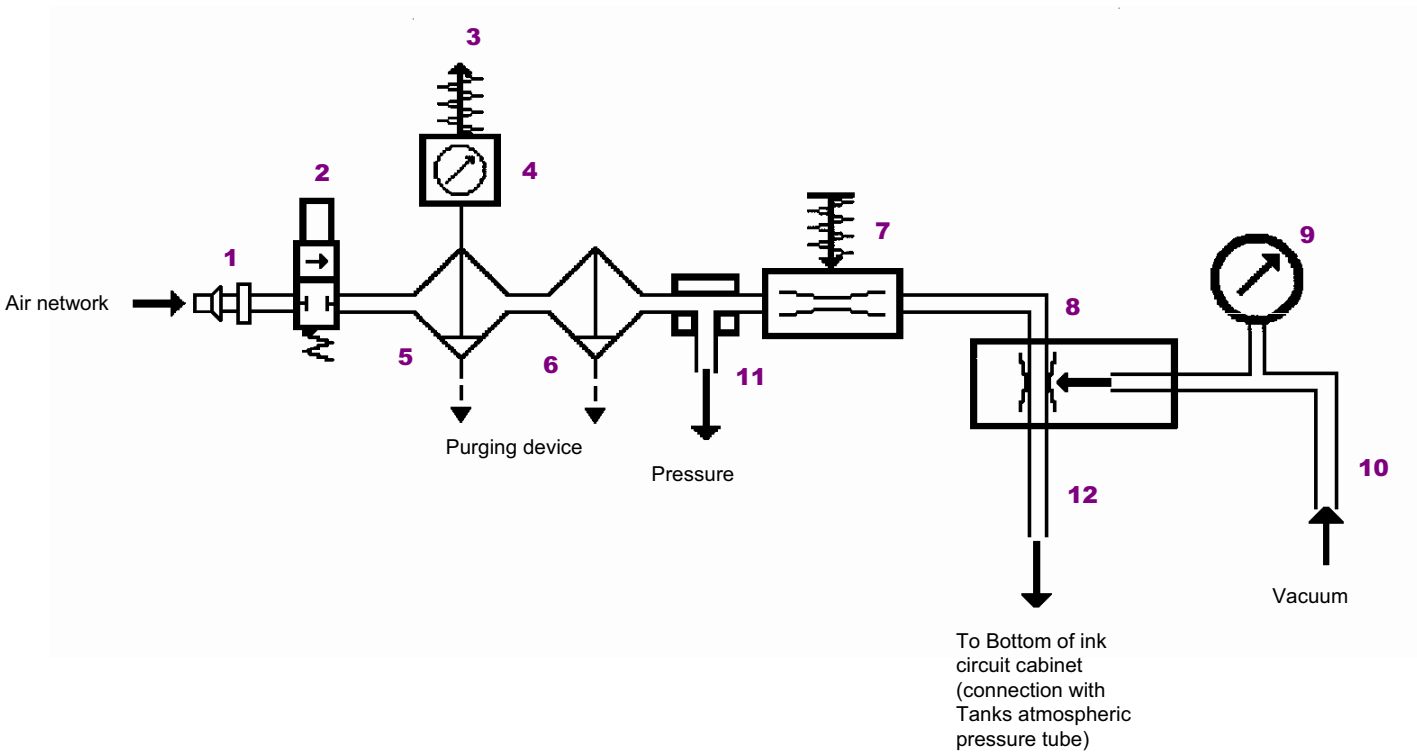
The air available on the site must meet the following characteristics:

- Kit inlet pressure must be between 5 and 8 bars,
- Kit inlet air flow must be at least 1100 NI/h at 4 bars,
- Operating temperature must be between 0°C and +50°C,
- The air must be clean, dry and oil-free. The air must contain no more than 0.12 g of water per m3 and 1 ppm of oil, and particles must be < 5 µ.

Maintenance



Hydraulic diagram



1. Connection of compressed air plant
2. Electrovalve
3. Pressure regulator (Adjustment)
4. Pressure gauge
5. Filter 5 μ
6. Filter 0,03 μ
7. Vacuum set screw

8. Vacuum pump
9. Vacuum gauge
10. Vacuum tube
11. Pressure tube
12. Outlett



Maintenance

Set inlet pressure

The inlet pressure (i.e. the plant air kit outlet pressure) is the pressure that the printer needs to operate. It must **be 0.7 bar (+0.3/ -0.1) above** the printer operating pressure **at all times**.

1. Select ► *Production/Maintenance/ELV status modification* to display the operating pressure:

Phase:	TEST	Sub-phase:	3
Operating pressure:	3.92 bars	Elapsed time:	1 s
Charge:	INPUT	Discharge:	CLOSED
Equi.-air:	DIVIDER BRIDGE	A./P.:	CLOSED
Air transfer:	CLOSED	Ink transfer:	CLOSED
Equi.-Visco.:	CLOSED	Viscometer:	CLOSED
Additive addition:	CLOSED	Ink addition:	CLOSED
Accumulator level:	high: + low: -		
Viscometer level:	high: + low: -		
Vacuum reservoir level:	high: - low: +		

The **operating pressure** is displayed on the screen by default. This is the value required to maintain the jet speed, and it varies according to the type of ink and the viscosity. It should therefore be checked at the **correct viscosity**.

2. Go to the **Phase** line then press the  key to display TEST.

3. Go to the **Operating pressure** line, then press the  key to open the COMPRESSOR / DIVIDER BRIDGE selection box.

4. Select COMPRESSOR and confirm. Wait for a few seconds. The pressure value is displayed.

5. Adjust the pressure if required by turning the adjustment screw (3).

Set the vacuum pressure

The vacuum pressure value depends on the type of ink and the type of printer concerned. Refer to the Ink Running Specification Sheet or the technical data sheet for the ink used to obtain this value and adjust the plant air kit, if required.

Adjust the vacuum pressure if required by turning the adjustment screw (7).



Maintenance



Test the divider bridge

The purpose of this test is to determine whether any of the three-divider bridge restrictions are blocked. First make sure that the inlet pressure is correct.

Select DIVIDER BRIDGE in the previous screen and confirm. Wait for a few seconds. The pressure value is displayed.





Maintenance

■ Replace AC supply fuse

Tools required:

- Allen key (2.5 mm).
- Screwdriver.

The system uses a 4A time delay fuse.



Figure 1 *Fuse location*

1. Shut down the printer and disconnect it from the main AC power supply.
3. Undo the four screws (1) with the Allen key and remove the cover.
2. Disconnect the power supply cord from the printer.
4. Remove the fuse-holder next to the power point with a screwdriver.
5. Replace the fuse.
6. Fit the fuse holder and the cover back in position.
7. Reconnect the power supply cord from the printer.
8. Connect the printer to the AC supply and start the printer.



Maintenance

■ Change the pressurization air filter cartridge: 9040 -

9040 IP65 - 9040 S

This filter is located on the air treatment assembly inside the hydraulic compartment.

1. Shut down the printer normally and disconnect from the main AC power supply.
2. Disconnect the air supply or air supply close valve to the printer.
3. Unscrew the air filter housing and pull the base downwards.
4. Unscrew the filter
5. Clean the mesh unit using air.
6. Change the filter cartridge and the O-ring seal.
7. Reinstall the assembly.

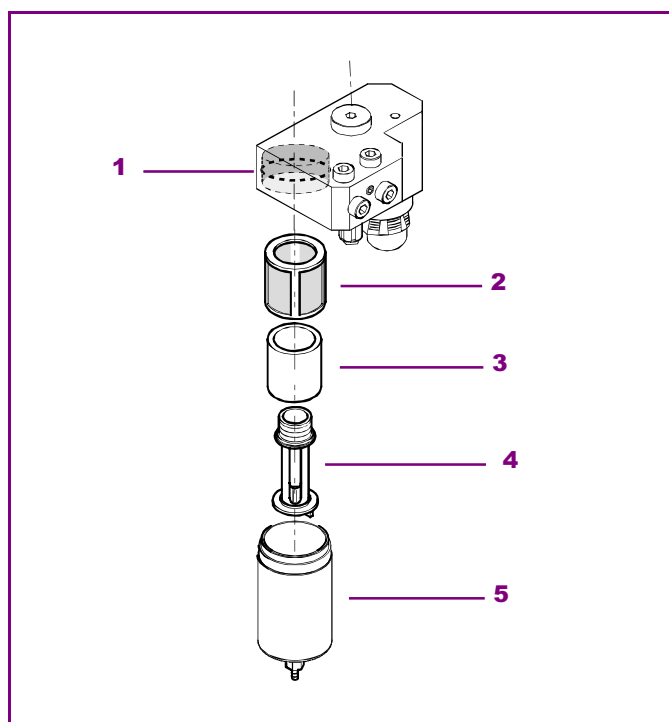


Figure 1 Air treatment assembly

1	Seal
2	Mesh unit
3	Filter cartridge
4	Filter support
5	Housing



Maintenance

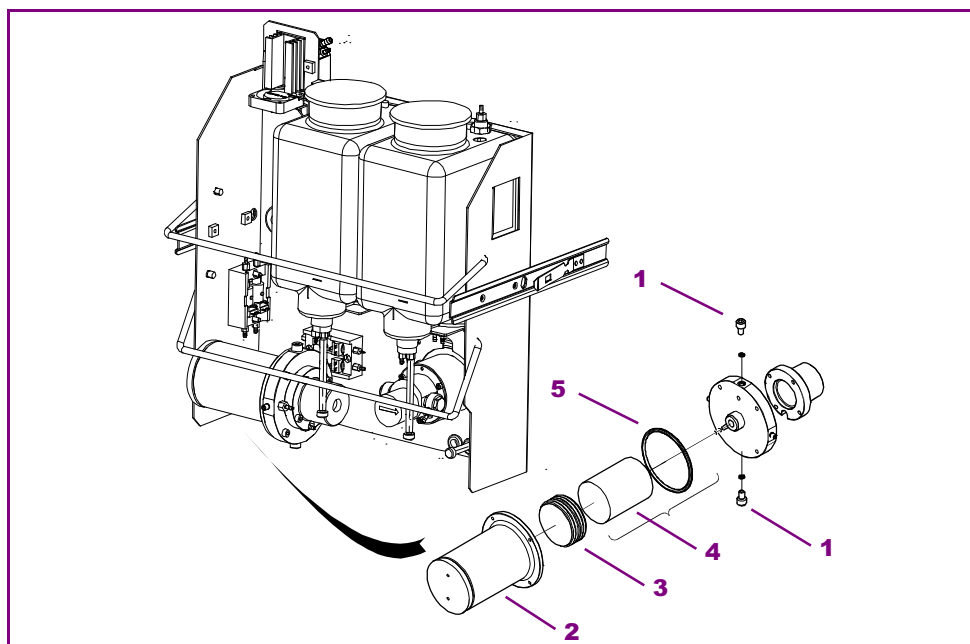


■ Change ink filter cartridge: 9040 - 9040 IP65 - 9040 S

Tools required:

- Allen key (3 mm)

1. Shutdown the printer normally and disconnect from main AC supply.
2. Pull the ink circuit out to the end of the rails.
3. Drain the ink circuit. (see procedure)
4. Open main filter. Take out the cartridge.
CAUTION There may be ink inside the main filter housing.
5. Place the pulsation damper is back in position and fit the new filter cartridge. Fit a new O-ring into the base of the filter housing. Ensure all drain circuits are closed and pour a small quantity of ink into the tank.
6. Start the printer. Check for any leakage and ensure the pressure is correct. Perform routine checks.



- | | |
|---|------------------------|
| 1 | Drain screw |
| 2 | Main filter |
| 3 | Metal pulsation damper |
| 4 | Filter cartridge |
| 5 | O-ring |





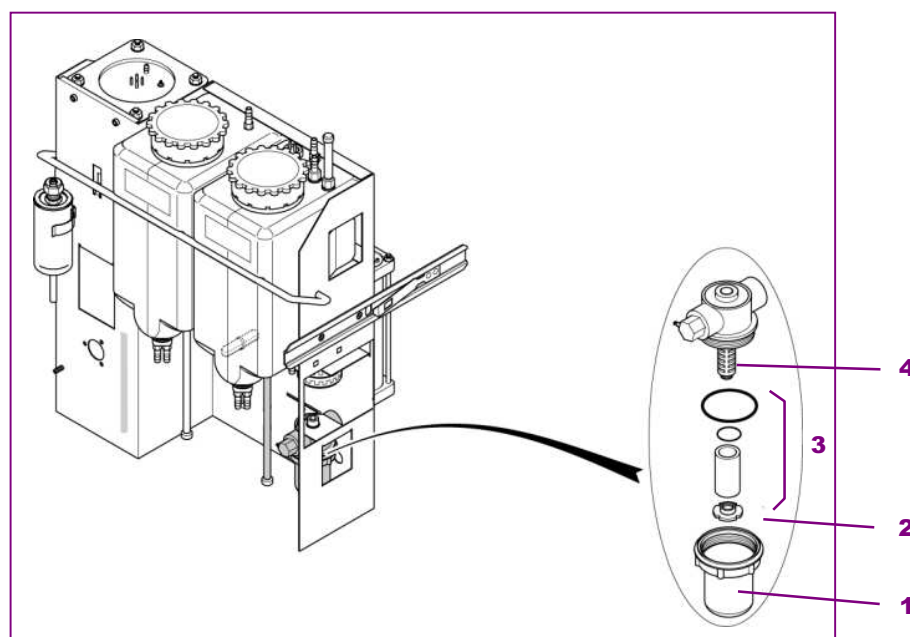
Maintenance

■ Change ink filter cartridge: 9040 Contrast

Tools required:

- Recovery tank.

1. Shut down the printer normally.
2. Placer a recovery container under the filter and unscrew the lower casing (1).
3. Unscrew the base holder of the cartridge (2).
4. Remove the cartridge and the O-ring (3)
5. Replace the filter support tube (4).
6. Fit the new cartridge and tighten the base holder.
7. Clean the filter casing and fit a new O-ring inside the lower casing
8. Screw the casing back in position.
8. Make sure that the filter is not leaking when you re-start the printer.





Maintenance

■ Change coalescence filter: 9040 Contrast

Tools required:

- Open-end wrench.

1. Shut down the printer normally.
2. Open the door of the hydraulic compartment.
3. Pull out the ink circuit to access the filter (figures 1 and 2).
4. Undo the "filter side" nuts completely.
5. Remove the filter. Making a note of the flow direction arrows.
6. Fit the new filter, making sure that the arrow is pointing in the proper direction.

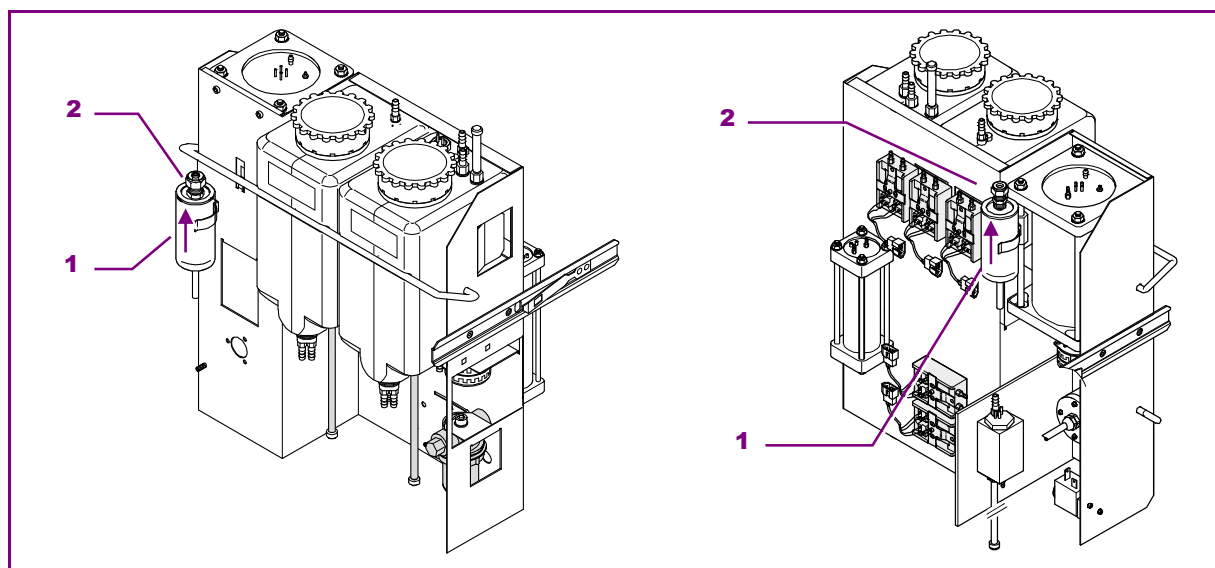


Figure 1: Front view

Figure 2 : Rear view

- | | |
|---|--------------------|
| 1 | Coalescence filter |
| 2 | Connector |





Maintenance

7. Refit the ferrules (Figure 3).
8. Push the tube until it is fully home inside the connector.
9. Tighten the nut by hand and then tighten it 3/4 of a turn.
10. Pull on the filter to make sure that there is no free play inside the connector.
11. Start the printer and make sure that there is no air leakage.
12. Perform routine checks

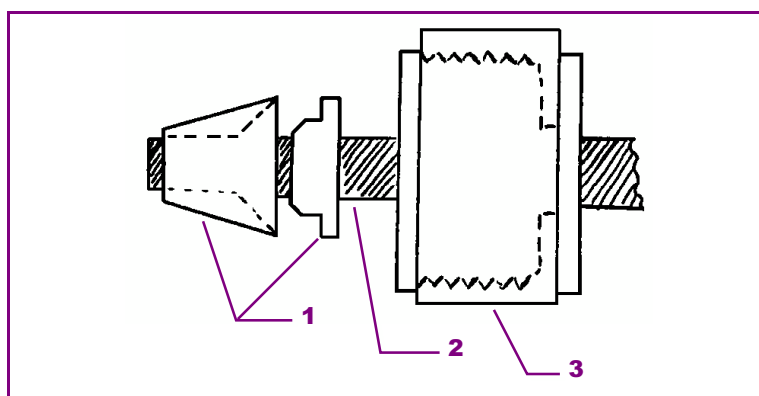


Figure 3

- | | |
|----------|----------------|
| 1 | <i>Ferrule</i> |
| 2 | <i>Tube</i> |
| 3 | <i>Nut</i> |



Maintenance

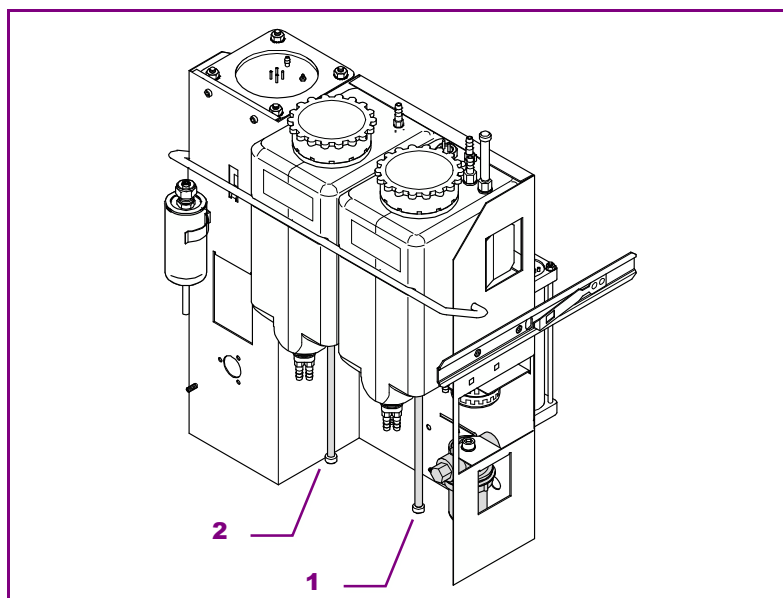
■ Change ink: 9040 Contrast

CAUTION Check consumable expiration dates shown on the container labels.

Frequency: see the IRS – Ink Running Specifications or ink technical data sheet.

Perform following procedures when printer is in service:

1. Drain additive tank by removing the additive drain plug from the additive drain tube. Refit the additive drain plug when draining is completed.
2. Place a recovery container beneath the ink tank. Remove the drain plug from the ink tank drain tube.
3. Select and confirm the ► *Production/Maintenance/Drain* function. The printer shuts down when draining has been completed.
4. Refit the ink tank drain tube plug.
5. Pour ink into the tank (max. half full/1 liter).
6. Start the printer normally, check to ensure the print head is clean, clean if required.
7. Check the jet break-off point when the printer has been in operation for a minimum of 30 minutes. This setting may need to be adjusted after the ink has been changed.



-
- | | |
|---|--------------------------|
| 1 | Ink tank drain tube |
| 2 | Additive tank drain tube |
-



Maintenance

■ Test electrovalves

9040, 9040 IP65 and 9040 S printers

► Production/Maintenance/ELV status modification

ON PRODUCTION MENU			
Printer	Message	Status/Printhead	Maintenance
Visco.:	CLOSED	Visco. level:	0 %
Additive:	CLOSED	Visco. High level:	-
Viscosity:	29 s / 4,1 cPs	Visco. Low level:	-
Reference visco.:	29 s ✓	Ink level:	LOW
Additive (Head 1):	CLOSED	Vacuum (Head 1):	CLOSED
Additive (Head 2):	CLOSED	Vacuum (Head 2):	CLOSED

This function allows you to run electrovalves individually to make sure that they are operating correctly. It applies to:

- the ink circuit viscometer drain and additive addition ELVs,
- the head additive and vacuum ELVs.



Move to the row for the ELV concerned and then press the key. Use the , arrow keys to select OPEN or CLOSED.

9040 Contrast printers

► Production/Maintenance/ELV status modification

Phase:	VISCO	Sub-phase:	3
Operating pressure:	3.92 bars	Elapsed time:	1 s
Charge:	CLOSED	Discharge:	CLOSED
Equi.-air:	CLOSED	A./P.:	CLOSED
Air transfer:	CLOSED	Ink transfer:	CLOSED
Equi.-Visco.:	CLOSED	Viscometer:	CLOSED
Additive addition:	CLOSED	Ink addition:	CLOSED
Accumulator level:	high: + low: -		
Viscometer level:	hi^		
Vacuum reservoir level:	high: - low: +		





Maintenance

In normal operation (i.e. when no faults are present), this dialog box allows the user to view:

- ☐ The different ink circuit management phases and sub-phases;
- ☐ Changes in accumulator, viscometer and vacuum reservoir levels;
- ☐ The status of all ink circuit electrovalves.

If an ink circuit fault is present, the phases are suspended and the printer changes to "Standby" mode.

Phase:	STAND BY	Sub-phase:	21
Operating pressure:	0,00 bars	Elapsed time:	1 s
Charge:	CLOSED	Discharge:	CLOSED
Equi.-air:	CLOSED	A./P.:	CLOSED
Air transfer:	CLOSED	Ink transfer:	CLOSED
Equi.-Visco.:	CLOSED	Viscometer:	CLOSED
Additive addition:	CLOSED	Ink addition:	CLOSED
Accumulator level:	high: ↑ low: -		
Viscometer level:	high: ↑ low: -		
Vacuum reservoir level:	high: - low: ↑		

In standby mode:

- ☐ Jets are halted,
- ☐ Ink circuit electrovalves are closed, and the
- ☐ Compressed air supply is shut off.

Wait until the display shows "Sub-phase 21". You can now control the ink circuit electrovalves to ensure that they are operating correctly.





Maintenance

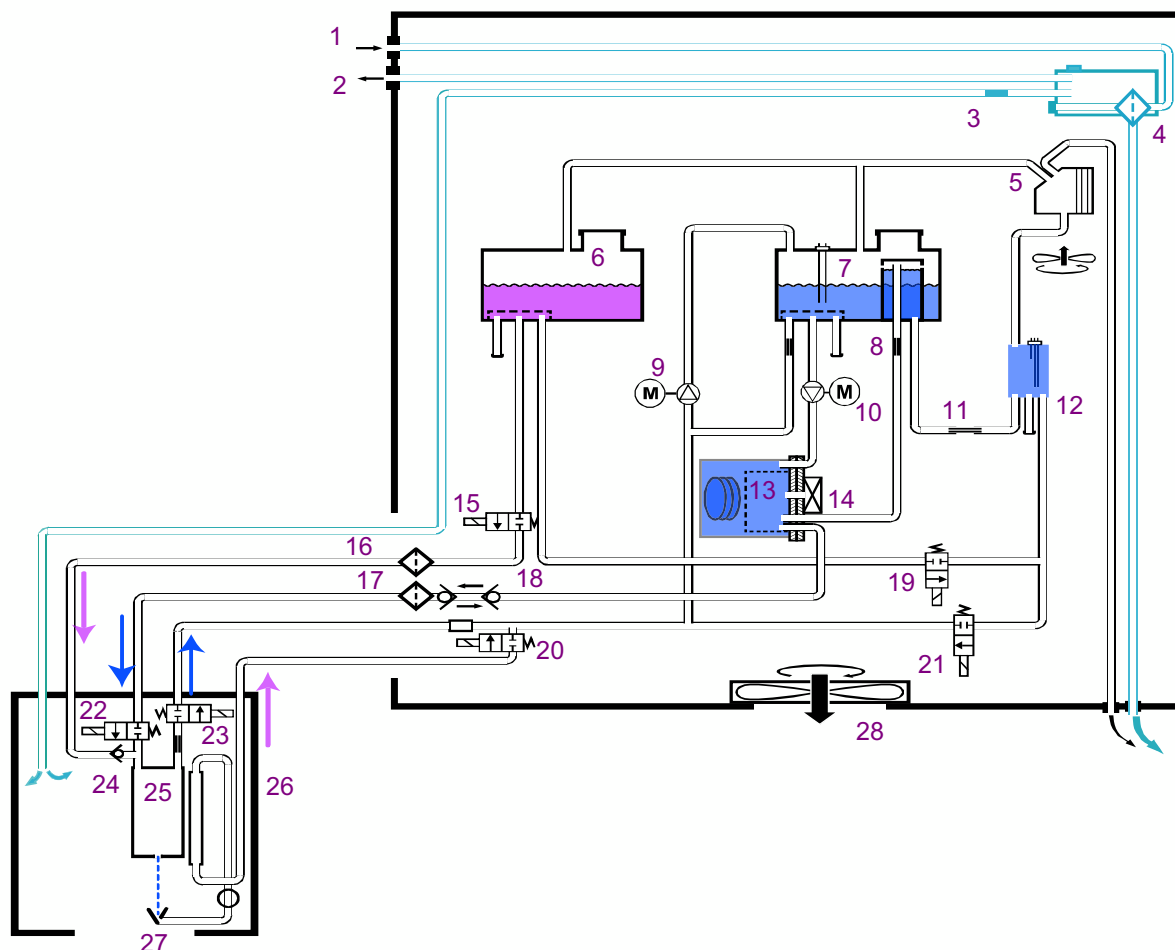
■ Hydraulic diagrams:

9040

9040 IP65

9040 S

- Head drying kit option



- 1 Air supply
- 2 Head drying kit outlet
- 3 Pressurization outlet
- 4 Air filter
- 5 Condenser with fan
- 6 Additive tank
- 7 Ink tank
- 8 Restriction tube (0.3 mm)
- 9 Vacuum pump and motor
- 10 Pressure pump and motor
- 11 Ceramic restriction tube
- 12 Viscometer

- 13 Anti-pulse system
- 14 Pressure/temperature sensor
- 15 Rinsing electrovalve
- 16 Head filter - additive
- 17 Head filter - ink
- 18 Self-closing connection
- 19 Additive addition electrovalve
- 20 Gutter electrovalve
- 21 Viscometer drain electrovalve
- 22 Pressure electrovalve
- 23 Bleed electrovalve
- 24 One-way valve

- 25 Cannons
- 26 Flow control
- 27 Gutters
- 28 Fan



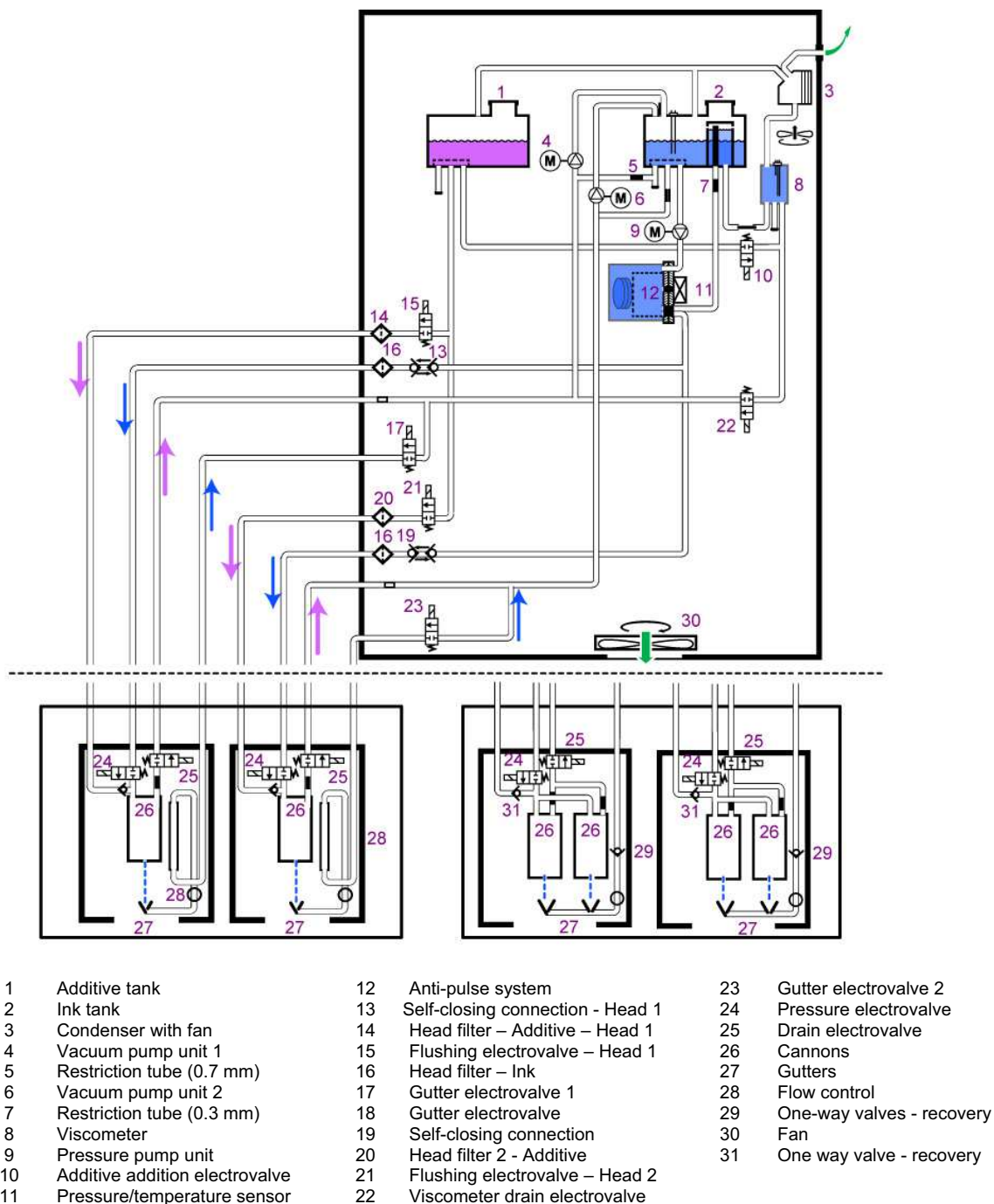


Maintenance

9040

9040 IP65

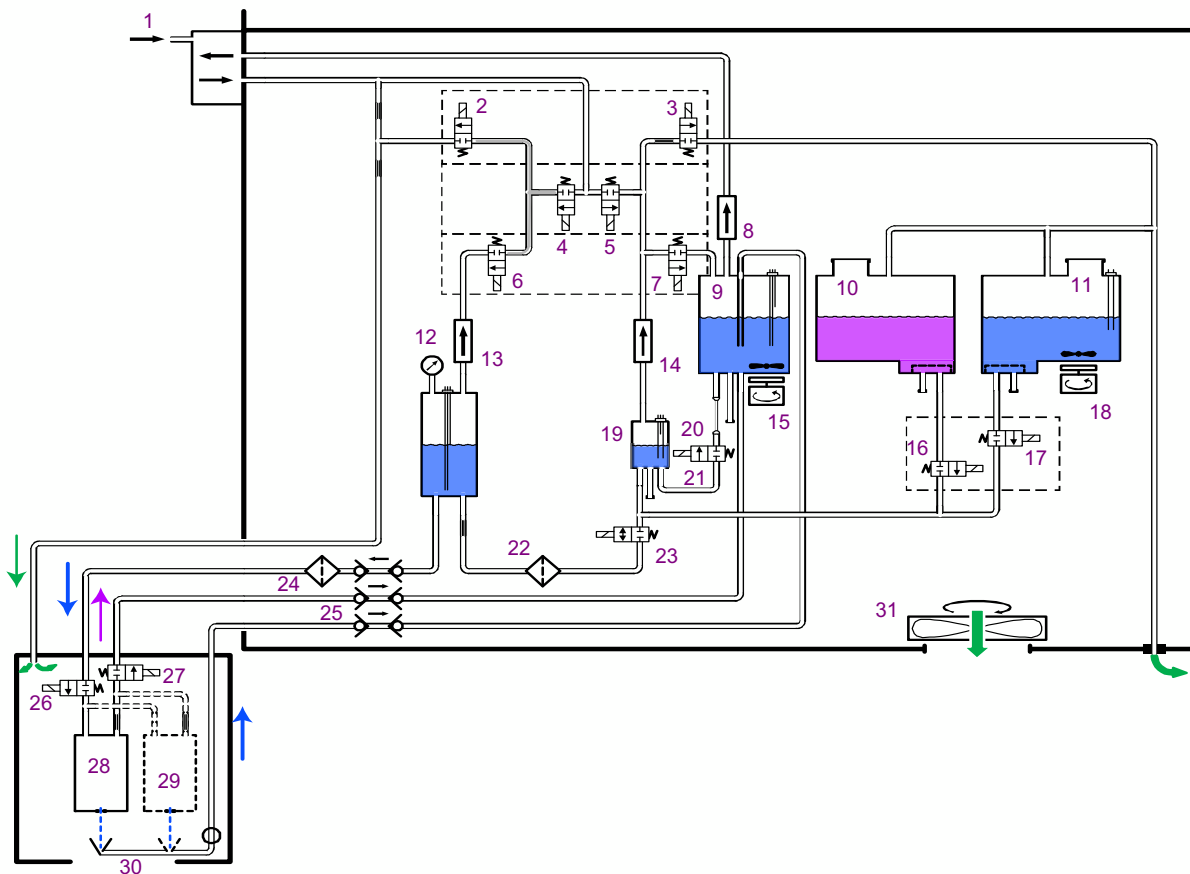
9040 S





Maintenance

9040 Contrast



- | | | | | | |
|----|-----------------------------------|----|--------------------------------|----|---------------------------|
| 1 | Air supply | 12 | Pressure sensor | 23 | Ink transfer electrovalve |
| 2 | Discharge electrovalve | 13 | Coalescence filter | 24 | Head filter |
| 3 | Atmospheric pressure electrovalve | 14 | Coalescence filter | 25 | Self-closing connections |
| 4 | Charge electrovalve | 15 | Stirrer motor | 26 | Pressure electrovalve |
| 5 | Air transfer electrovalve | 16 | Additive addition electrovalve | 27 | Drain electrovalve |
| 6 | Equi-air electrovalve | 17 | Ink addition electrovalve | 28 | Single-jet cannon |
| 7 | Equi-visc electrovalve | 18 | Stirrer motor | 29 | Twin-jet cannon |
| 8 | Coalescence filter | 19 | Viscometer | 30 | Recovery gutter |
| 9 | Recovery tank | 20 | Visc. flow controller | 31 | Fan |
| 10 | Additive tank | 21 | Viscometer electrovalve | | |
| 11 | Ink tank | 22 | Ink filter | | |







Alarms and faults



Alarms and faults



Alarms and faults

■ Introduction

This section is a maintenance guide designed to assist the user in identifying the cause of a fault quickly and easily.

The first step is to diagnose the type of fault concerned, without having to remove any parts. A series of targeted checks is then made to identify the exact part concerned by the fault.

This guide provides a list of possible failures and the action, which needs to be taken to return to normal operation.

All of the tools required can be found in the printers service kit.

■ Override head cover and recuperation faults

► Production/Maintenance/Clear faults

The screenshot shows a printer's maintenance menu. At the top, it says 'ON' and 'PRODUCTION MENU'. Below that, there are four tabs: 'Printer', 'Message', 'Status/Printhead', and 'Maintenance'. The 'Maintenance' tab is selected. In the center, there is a box with two options: 'Head cover fault:' followed by a checkbox, and 'Recuperation fault:' followed by a checkbox. At the bottom of the screen, there is a line of text: 'TEXT 000000001 08/JUN/06' and '09:09:4343 08JUN07'.

It may be necessary to disable fault checks on head cover and recuperation faults for some servicing or maintenance operations. This function is used to clear these faults, or more precisely, to stop monitoring them. This function is reset to its initial value every time the printer is shut down.

NOTE

This function must only be used for maintenance operations and fault overrides should be restricted to exceptional cases only.





Alarms and faults

■ Check printer parameters

Check general operating parameters



Head: 1		Head: 2	
Status jet(s):	RUNNING	Status jet(s):	RUNNING
Speed jet1:	20,00 m/s	Speed jet1:	20,00 m/s
Phase jet1:	00001111	Phase jet1:	
Speed jet2:	20,00 m/s	Speed jet2:	20,00 m/s
Phase jet2:	00001111	Phase jet2:	00001111
Pressure:	2,89 bars	Motor speed:	1560 t/mn
Viscosity:	29 s / 4,1 cPs	Reference visco.:	29 s / 4,1 cPs
Elect. Temp:	30 °C	Additions:	04
Ink Temperature:	37 °C	FAULTS:	☒

This screen is specific to a two-head, twinjet type printer. Some of the information may not be present for your machine configuration and type or may be displayed on the screen in a different way.

NOTE

Press the **Ctrl** + **P** (Control+Print) keys simultaneously while in this screen to print the active message. This function will only be active if the message is in a **Manual object** or **Manual Auto** set-off mode and the jet(s) are in service.





Alarms and faults

View operating parameter log

► Production/Maintenance/SAV

Date : 18/12/00 17:41		Page 03/48						
Heure	Vmot	Pres	Tr	Ad	Vjet	T1	T2	Def
05:25	1694	2,76	31	06	20,0	34	22	00
05:30	1694	2,76	31	06	20,0	34	22	00
05:35	1694	2,76	32	07	20,0	34	22	00
05:40	1694	2,80	31	08	20,0	33	21	00
05:46	1694	2,76	31	09	20,0	33	21	00
05:51	1694	2,76	31	11	20,1	34	21	00
05:56	1676	2,76	30	12	20,1	34	21	00
06:00	1630	2,76	29	13	20,2	34	22	00
06:05	1604	2,72	29	14	20,1	35	22	00
06:10	1578	2,72	28	14	20,2	35	22	00
06:15	1570	2,72	28	14	20,1	35	22	00
06:20	1570	2,72	28	14	20,1	35	22	00
06:25	1562	2,72	29	14	20,1	35	22	00
06:30	1562	2,72	28	14	20,1	36	22	00
06:37	1554	2,72	29	00	20,1	36	22	00

This function allows the user to view a log of the printer's operating parameters. The log consists of 48 tables of fifteen records registered at five-minute intervals.

Logged parameters are:

- Ttra: Transfer time
- Pres: Pressure (bar)
- Tr: Viscometer filling time
- Ad: Number of additive additions
- V jet: Average jet speed (m/s)
- T1: Electronic circuit temperature (°C)
- T2: not significant
- Def: Hexadecimal value of machine parameters byte





Alarms and faults

■ Preliminary checks

Troubleshooting must always begin with preliminary checks. These checks are used to detect dirty parts, ink leakage or problems with electrical or hydraulic connections with the naked eye.

Shut down the printer and disconnect from the AC power supply. Check the points indicated below.

	Check	Type of problem to look for
External appearance	Cabinet and operator interface	Signs of impact/cutting
	Printhead	Dirty electrodes. Ink leakage. Mechanical parts damaged or out of adjustment
	Connections for accessories.	Connectors disconnected Cuts in cables
Appearance of ink circuit	Tanks	Tanks open or damaged. Ink tube leakage. Ink and additive tanks empty. Ink quality (odor, consistency). Additive quality (odor, color).
	Hydraulic piping and connections.	Ink/solvent leakage. Tubing bent, damaged or cut.
	Electrical connections to various parts.	Faulty connections on: - ink circuit-wiring harness, - ink level detector connections (upper part of ink tank), - fan condition, - viscometer, - electrovalves wiring.
Electronics and hydraulic compartments	All cards present in electronics compartment	Board missing
	Connections inside electronics compartment	Faulty connections on: - main board, - front panel board, - power supply module.
	Electrical connections	Faulty connections on: - umbilical ribbon cable on main board, - EHT block on wiring for umbilical, - ribbon cable on the industrial interface board, - industrial interface board terminal blocks.
	Compressed air connections	Faulty connections on: - air piping.





Alarms and faults

■ Troubleshooting

Introduction

The tables shown in this section consist of two columns:

- Problems noted by the operator or displayed by the printer,
- Remedies

Each problem is identified by number, which is shown in bold in the table.

Different "remedies" are shown for each of the problems.

When the preliminary checks have been completed, apply the first remedy shown for the situation described. Apply the next remedy if the problem persists, and so on.

When you have corrected the fault condition, press the  key to clear it from memory.

When starting printer

Problems	Remedies
1- Green AC power supply indicator light off.	1a- Check main power supply cable connections. 1b- Change main 4A time-delay fuse (see corresponding procedure).
2- Operator interface display off. Printer starts.	2a- Shut down the printer and restart. 2b- The problem is on the front panel board. Contact Markem-Imaje Technical Assistance.
3- Operator interface indicator lights and display off. The printer doesn't start. or Operator interface indicator lights and display light up and stay on. The printer doesn't start.	3a- Shut down the printer and restart. 3b- Check the power supply voltage status LEDs on the main board. - If only two LEDs are on, the problem is with the power supply module. Contact Markem-Imaje Technical Assistance. - If all the LEDs are on, the problem is with the main board or the motor control board. Contact Markem-Imaje Technical Assistance.
4- Red alarm/fault indicator lights on.	4a- Press  to run self-diagnostics.
5- Lost memory.	5a- Re-program the printer then contact Markem-Imaje Technical Assistance.



Alarms and faults



6- CPU fault.	6a- Contact Markem-Imaje Technical Assistance if the fault persists.
7- Low ink level.	7a- Add ink to the tank concerned (max. 1/2 tank). 7b- The problem may be with the main board. Contact Markem-Imaje Technical Assistance.
8- Low additive tank level or Additive tank empty or Solvent fault.	8a- Add additive to tank (max. 1/2 tank). 8b- Check that the additive addition electrovalve is working correctly (▶ <i>Production/Maintenance/ELV status modification</i>). Check viscometer circuit. 8c- Contact Markem-Imaje Technical Assistance if the fault persists.
9- Fan/compressed air	9a- Fan failure or no compressed air. 9b- Check fan connection and ensure that the fan at the bottom of the cabinet rotates correctly. This fan should run continuously as soon as the printer is switched on. 9c- Ensure pressurization air present (except for 9040 Contrast models). 9d- The problem is on the main board. Contact Markem-Imaje Technical Assistance.
10- Temperature	10a- The ambient temperature in the room where the printer is installed is too high and is causing the temperature inside the electronics compartment to rise above 70° C. Modify installation. 10b- The problem is on the main board. Contact Markem-Imaje Technical Assistance.
11- Viscosity	11a- Check viscosity measurement circuit. 11b- Check viscometer electrovalve operating correctly by monitoring changes in viscometer levels (▶ <i>Production/Maintenance/ELV status modification</i>) 11c- Contact Markem-Imaje Technical Assistance if the fault persists.





Alarms and faults

When starting jets

Problems	Remedies
1- Cover missing	1a- Ensure cover on corresponding head is closed. 1b- Magnet inside the upper part of the cover missing. 1c- Faulty cover detector or problem on main board. Contact Markem-Imaje Technical Assistance.
2- EHT	2a- Carefully clean and dry the print head, head cover and all electrodes. 2b- Check break point and jet alignment 2c- Check head electromagnetic environment (possible interference). 2d- The problem is on the main board. Contact Markem-Imaje Technical Assistance.
3- Jet vacuum problem	3a- Start jets again and observe closely. - if one of the jets is unstable or deviates outside the gutter, press  then run the INTRO. SOLUTION and STABILITY functions in turn. - If the jet is not present, validate NOZZLE UNBLOCKING, INTRO. SOLUTION, STABILITY and REFRESHMENT functions in turn. 3b- If the jet or jets are still not present, the problem is on one of the pressure circuit components. Contact Markem-Imaje Technical Assistance. 3c- If there is insufficient suction in the gutter, the problem is in the vacuum circuit or one of its components. Contact Markem-Imaje Technical Assistance.





Alarms and faults

During printing

Problems	Remedies
1- Phase detection on jet (number 1 to 4)	1a- Clean and dry head electrodes. 1b- Check general operating parameters for printer. (🔧👉). 1c- Check characteristics of ink used in the printer - i.e. expiry date (refer to date shown on container), ink change frequency and environment conditions (see ink data sheet). 1d- Run the REFRESHMENT function for two minutes. 1e- Check head electromagnetic environment (possible interference). 1f- The problem is on the main board. Contact Markem-Imaje Technical Assistance.
2- Communication between the CPU and the printer	2a- The fault occurs while the message is being printed, after the conveyor has been shut down for an extended period. Print the message out again. 2b- The fault persists after a message print test has been performed at constant speed. The problem is on the main board. Contact Markem-Imaje Technical Assistance.
3- Print speed	3a- Reset Tacho Division or Print speed parameter settings on the printer.





Alarms and faults

4- Poor print quality

Example 1:

Example 2:

Example 3:

Example 4:

4a- Clean the printhead (including the cover) and make sure that there is no obstruction on the jet trajectory.

4b- Ensure the printhead bracket is stable and is not subject to vibration.

4c- Check head-object distance (examples 1 and 2).

4d- Ensure jets are centered in the recovery gutters (examples 3 and 4).

4e- Check the reference viscosity time displayed on the printer against the theoretical viscosity value given on the ink data sheet.

4f- Head needs mechanical and/or electronic adjustment. Contact Markem-Imaje Technical Assistance.

4g- The problem is on the main board. Contact Markem-Imaje Technical Assistance.





Alarms and faults

Faults specific to 9040 Contrast printers

CAUTION

The ink circuit includes stirring motors located at the bottom of the ink and recovery tanks. These are used for mixing the ink continuously.

The printer must therefore never be disconnected from the AC supply for more than two hours without draining and flushing the system beforehand.

1- Low accumulator level	1a- The fault occurs after several jet starts or after refresh sequences, which are excessively long. Wait for the tank to fill up again. 1b- Contact Markem-Imaje Technical Assistance if the fault persists.
2- Drain recovery tank	2a- The fault occurs after printhead cleaning or cleaning solution addition sequences. Drain the recovery tank via the drain tube provided. 2b- There is a fault on the recovery tank high-level detection system. Contact Markem-Imaje Technical Assistance.
3- Drain ink tank	3a- The fault occurs while the printer is being drained. Drain the tank. Contact Markem-Imaje Technical Assistance.
4- Regulator fault	4a- Activate regulator electrovalve. Press the  key to clear the fault. 4b- Contact Markem-Imaje Technical Assistance if the fault persists.



Alarms and faults

5- Ink fault 03

5a- Activate following electrovalves:

- Ink addition.
- Air transfer.

5b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

6- Accumulator fault 04

6a- Activate following electrovalves:

- Air transfer.
- A/P.
- Ink addition.

6b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

7- Accumulator fault 09

7a- Activate following electrovalves:

- Ink transfer.
- Air transfer.

7b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

8- Initialization fault 05

8a- Activate following electrovalves:

- Charge.
- Discharge.
- Equi.-air ?
- A/P.
- Air transfer.

8b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

9- Initialization fault 10

9a- Check inlet pressure and adjust if necessary.

9b- Activate following electrovalves:

- Discharge.
- Equi.-air.

9c- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.





Alarms and faults

10- Shutdown fault 13

10a- Activate following electrovalves:

- A/P.
- Viscometer

10b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

11- Shutdown fault 15 or 19

11a- Activate all electrovalves.

11b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

12- Viscometer fault 08

12a- Activate following electrovalves:

- Viscometer
- A/P.

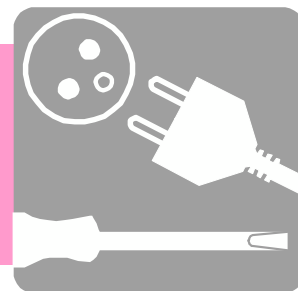
12b- Press the  key to clear the fault. Contact Markem-Imaje Technical Assistance if the fault persists.

NOTE

(Faults 16 to 23)

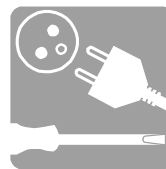
The electrovalves can be activated in "Standby phase" after "Sub-phase 21" is displayed. Refer to section XX of this manual for ELV activation procedures.





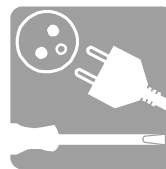
Installation and configuration





Installation and configuration

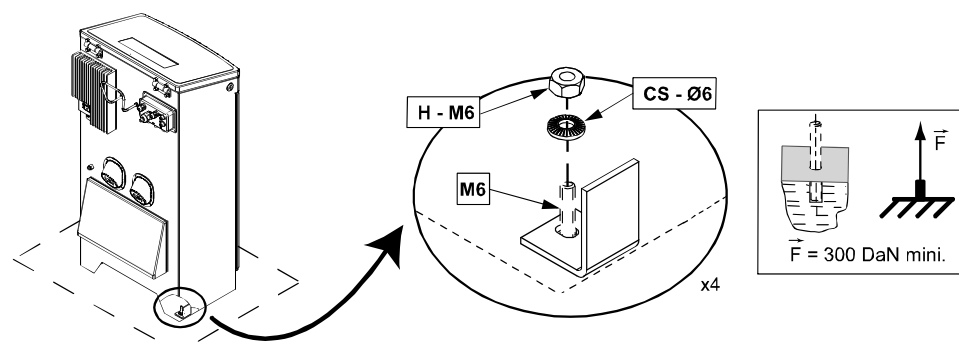
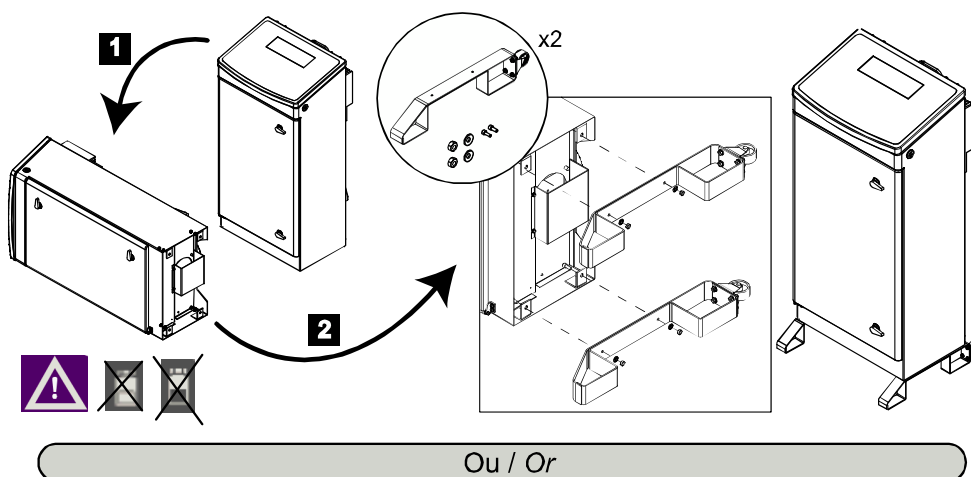
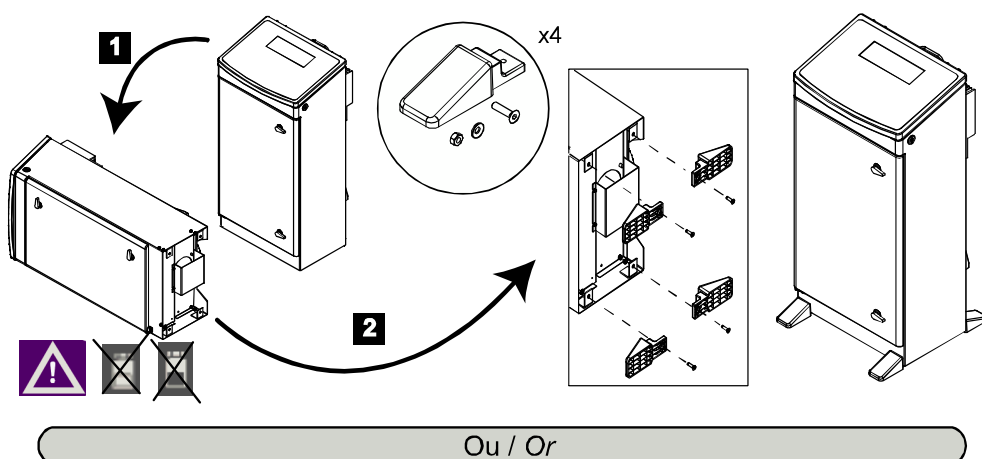




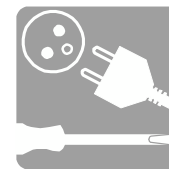
Installation and configuration

■ Installing the printer

The printer must be equipped with a stability kit. The kit must be installed before adding a consumable.



Installation and configuration



Characteristics of the printer 9040 IP65

A stream of air constantly circulates inside the printer and keeps the unit pressurized to prevent the ingress of dust and humidity inside the printheads and in the different compartments of 9040 IP65 model printers.

Air is introduced via a high capacity electrovalve for 30 seconds every time the printer is started to clear any vapors from inside the unit. The printer will not start until this stage is completed.

Compressed air must be available to allow the printer to be started. If the pressure drops when the printer is in service, a safety pressure switch flags a "ventilation fault" and automatically triggers a shutdown procedure of the printer.

The air taken into the printer must be clean, dry and oil-free, at a pressure of between 5 and 8 bar (72.5 to 145 psi) and a minimum flow rate of 15,000 NI/h (9 SCFM). The printer incorporates an automatically draining filter.

NOTE

A flow rate of 15,000 NI/h (9 SCFM) is needed for thirty seconds on start-up.

When the printer is in service, air consumption is around 1,500 NI/h (0.882 SCFM) for single-head models and 1,900 NI/h (1.117 SCFM) for twin-head models.

The air intake is at the back of the printer on a 1/8 G threaded female connector.

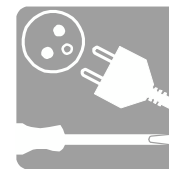
CAUTION

The printer air supply must meet the following requirements to provide the flow rates indicated above:

- Air tubing of over 4 mm in diameter,*
 - length of air tubing less than 5 meters,*
 - no elbows,*
 - valve bore diameter larger than 8 mm.*
-



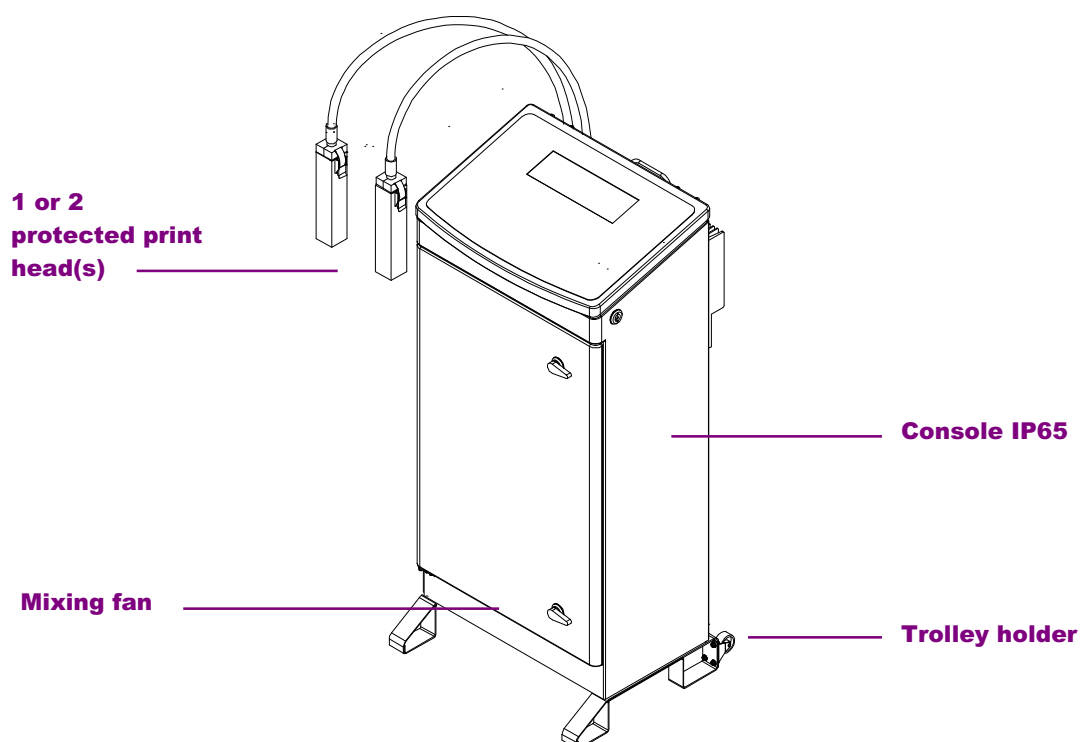
Installation and configuration



An additive vapor condenser reduces emissions from the printer to a minimum. The cooling matrix for this condenser is cooled by the air used to pressurize the hydraulic compartment, in conjunction with a small fan located under the condenser itself.

A circulating fan homogenizes the air continuously and maintains a uniform temperature inside the hydraulic compartment. A ventilation system can also be provided for the electronic compartment in certain cases.

The printheads on 9040 IP65 model printers are protected by stainless steel tube with a removable magnetic stopper.





Installation and configuration

■ Initialize/Configure Printer

These functions are used for initializing the printer when it is first commissioned into service and for changing settings when the printer is in operation.

Select dialog language

► Printer preparation/Initialization//**Language**

The language used on the Operator Interface is selected via a dialog box.

Initialize date and time

► Printer preparation/Initialization/**Autoclock**

This function is for setting the printer time and date.

Note: see "Using date and time" in the "Message editing" section of this manual for further details on date and time settings.

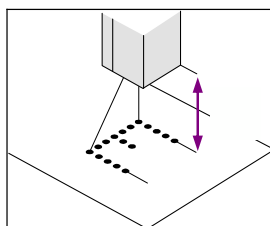
Set head/object distance

► Printer preparation/Initialization/Message/**Head-Object Distance**

This function is used for setting the distance (d) between the head and the object to be printed for each type of head. Default settings are:

- ☐ 10 mm for a G head.
- ☐ 08 mm for an M head.
- ☐ 06 mm for a P head.

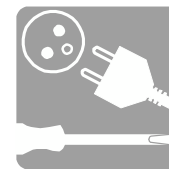
This distance is determined by algorithms combining the type of head and the maximum print speeds beign used.



NOTE

The physical distance between the head and the object should be adjusted to suit the ink used, as indicated on the Ink Running Specification or the technical data sheet for the ink.

Installation and configuration



Select machine options

► Printer preparation/Options/Machine options

PRINTER PREPARATION MENU			
Initialization	Parameters	Options	Access codes
Printing msg in lib. each DTOP: ☐			
Speed fault override: ☐			
Cable printing option ☐			
Julian post date (offset): ☐		One DTOP per message: ☐	
Drop flight compensation: ☐			

This function allows you to specify whether specific options are to be made available ☒ or not ☐.

■ Printing msg in lib. each DTOP

For printing a new message from the library on each DTOP signal. When the final message in the library is printed, the printer then selects message no. 1 for the next following printing task.

■ Speed fault override

To override "print speed" faults. These faults will not be registered or indicated.

■ Cable printing option

To continuously increment counters on object signal regardless of jet status (if the jets are stopped or in fault condition).

■ Julian post date (offset)

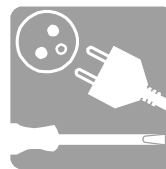
To add a number between 0 and 633 to the Julian calendar. The total value (current date plus offset) must not exceed 999.

■ One DTOP per message

Prevents message from being printed more than once.

■ Drop flight compensation

To minimize any variation in position of the marking made on the substrate if there is any variation in the speed of the conveyor. The speed must be 0.2 m/s or above. Compensation is not applied at lower speeds.



Installation and configuration

Lock access

► Printer preparation/**Access codes**

These options allow you to enter codes to lock access to specific menus or functions.

CAUTION

You have to enter your security code before you can enter the Printer preparation menu.

■ Keyboard

► Printer preparation/Access codes/**Keyboard**

This function lets you lock all menus available via the keyboard, and disables access to functions using function keys F1 to F8.

A dialog box asks you to specify a three-character code. You will then be asked for this code every time you attempt access to a menu.

Keyboard code:

Keyboard code:

Open the function again to delete a keyboard code. The following dialog box is displayed:

Delete keyboard code?

NO

YES

CAUTION

THIS CODE IS DELETED EVERY TIME THE PRINTER IS SHUT DOWN

■ Security

► Printer preparation/Access codes/**Security**

This function allows you to lock access to the **Message editing** and **Printer preparation** menus only: it prevents any changes being made to data. It also disables access to functions when attempting to use the function keys F1 to F8. The **Production** and **Symbol editing** menus can still be accessed.

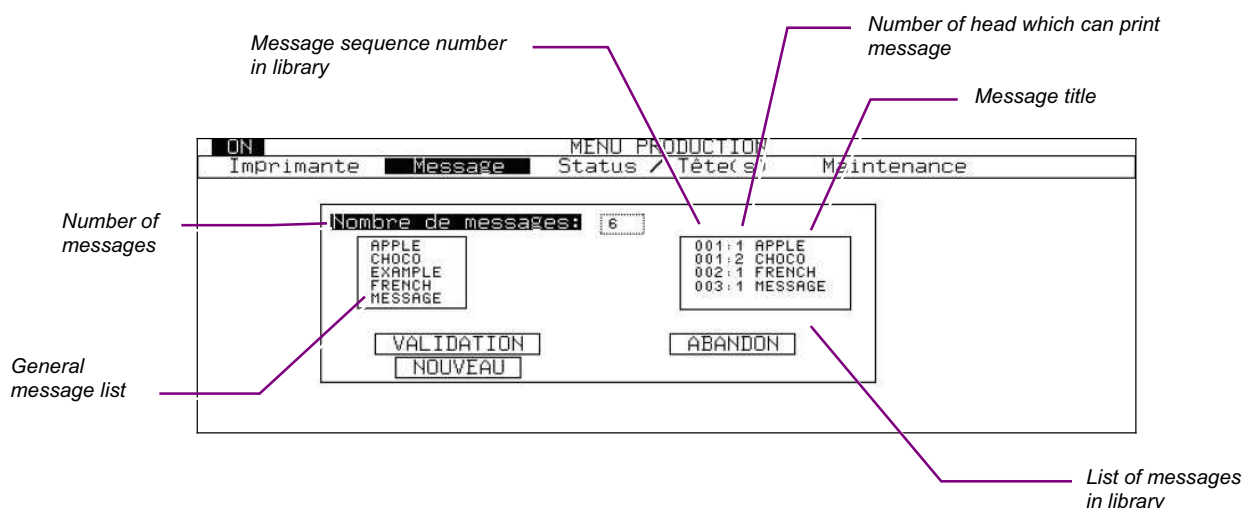
The code is created and deleted in the same way as the keyboard code.



Installation and configuration

Configure message library

► Production/Message/Library



This function is used to make a preliminary selection of messages from a general list of messages in memory in the PC board.

The selected messages can be shown to the user in the form of customized lists, which can be specific to each head if required.

CAUTION

*The number of messages in the library must always be greater than the number of heads on the printer.
The library can contain a maximum of 127 messages.*

■ Create a library

Select the messages and enter them into the library.

- Go to the general list and highlight the message concerned using the arrow keys,

- Press ,

The message is shown in the list of messages in the library. Messages are sorted in increasing numerical order.

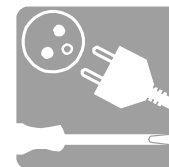
If you have a two-head printer, messages are assigned alternately to head 1 and then to head 2. If you have printer with one or two twin-nozzle heads, message numbers increase two numbers at a time.

Validate the library:

- Highlight the **VALID** button

- Press .

Installation and configuration



■ Delete library

- Highlight the **NEW** button and then confirm
- Highlight the **VALID** button and then confirm

■ Change library

- Highlight the message you want to delete in the library message list, then press . The message is removed from the list.

CAUTION

ALL Following messages are moved up towards the top of the list.

- Go to the general list and highlight the message you want to insert, then press . The message is added to the end of the library list.
- Highlight the **VALID** button and then confirm.

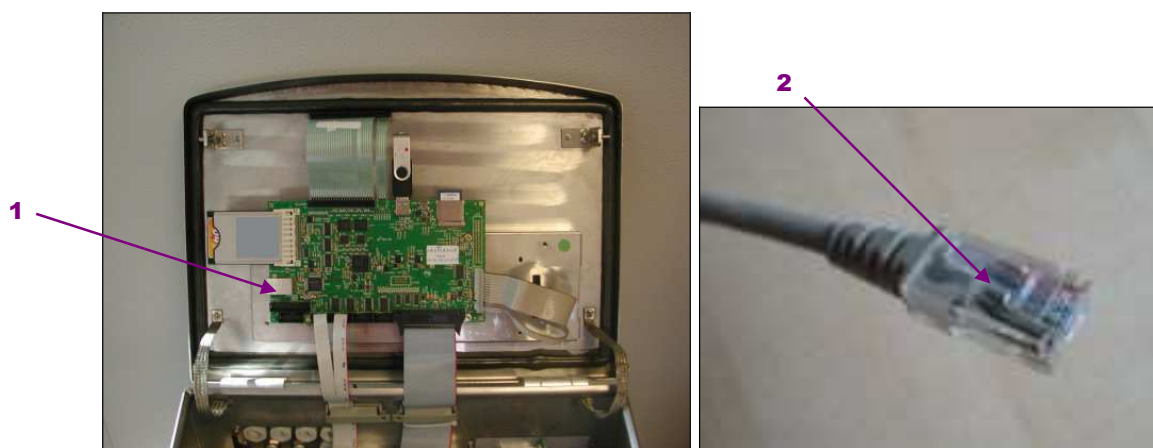
The **CANCEL** button is used to exit the function without making any changes.

Using the Ethernet link

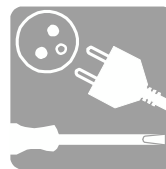
The Ethernet link is used to connect the printer to a corporate network.

■ Establishing the link

Open the console cover to access the Ethernet connector.



- | | |
|----------|--------------------|
| 1 | Ethernet connector |
| 2 | Foolproofing tab |



Installation and configuration

Insert an RJ45 network cable in the Ethernet connector (the foolproofing tab prevents the connector being inserted incorrectly).

Use a crossover RJ45 network cable to connect the printer directly to a PC or a straight cable to connect it to a hub or switch.

■ Configuring the link

► Printer Preparation/Initialization/**Ethernet Link**

OFF		PRINTER PREPARATION MENU	
Initialization		Parameters	Options Access codes
IP Address:		10.0.56.99	
Port number:		2101	

Setting the IP address

The IP address is set automatically by default (from a DHCP server). Please contact an Markem-Imaje technician if you need to set the IP address manually.

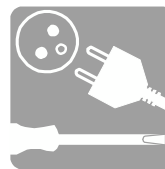
NOTE

If a DHCP server is not available, the IP address is set to 127.0.0.1 by default.

Port number

Select the connection port number, from 1024 to 9999.

The default port number is 2101.



Installation and configuration

Configure serial link

► Printer preparation/Initialization/RS232 connection

PRINTER PREPARATION MENU	
Initialization	Parameters Options Access codes
Speed (baud rate):	38400
Parity:	NO
Stop bit(s):	1
Watchdog (s):	3
8 bit format	
RS232 Link:	STANDARD
Simple Protocol:	NO

This function is used to configure an external communication serial link between the printer and an external device:

■ Speed

Select transmission speed (baud rate):: 4,800, 9,600, 19,200, 38,400 or 115,200.

■ Parity

Specify parity: No, Even or Odd.

■ Stop bit(s)

Select number of stop bits: 1 or 2.

■ Watchdog

Enter watchdog value in seconds: between 1 and 99.

■ RS232 Link

Select type of link: Direct, Standard or Test.

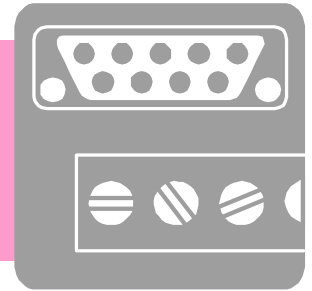
■ Simple protocol

Specify protocol type: None, message selection or external variables.

Refer to the 9040 printer serial link manual for further details on these settings.

CAUTION

The 8-bit transmission format cannot be changed.



External communications





External communications





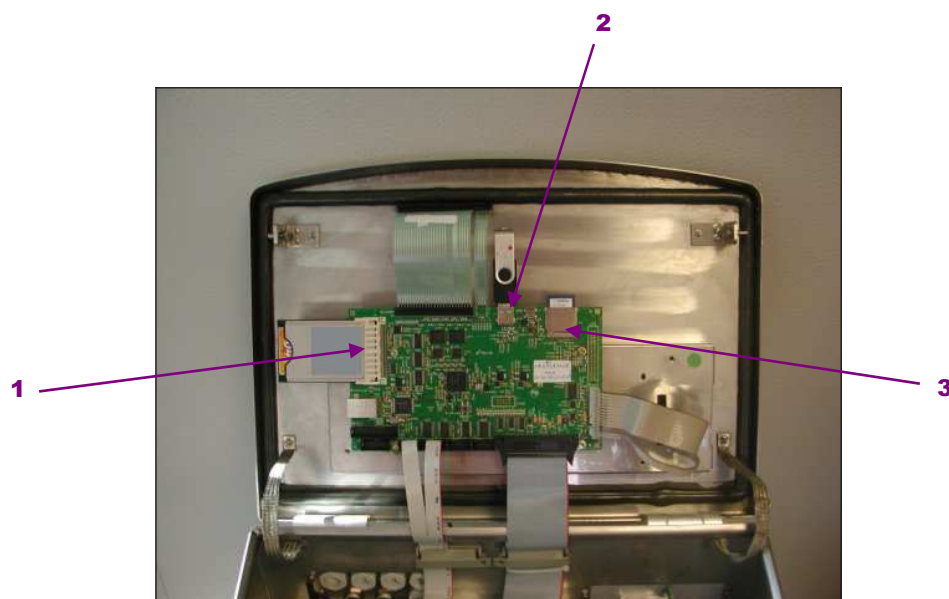
External communications

■ Exchanging data

Various media may be used to transfer data between the printer and other systems: PCMCIA cards, USB keys or SD cards.

Connecting media

Open the console cover to access the various card readers.



- | | |
|---|--------------------|
| 1 | PCMCIA card reader |
| 2 | USB key reader |
| 3 | SD card reader |

Insert a memory card or key, ensuring that it is inserted **in the correct direction**.

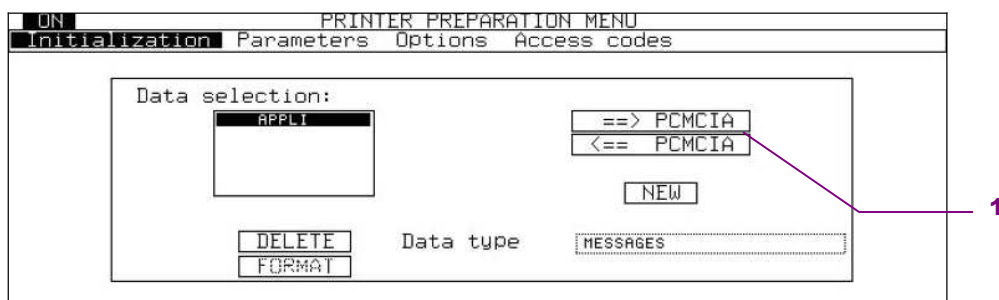




External communications

Transfer data

► Printer preparation/Initialization/**PCMCIA transfer**



This function enables data to be transferred from the printer to external media (cards or keys) and vice versa. The external media can also be formatted. The type of media connected is displayed on the screen (1).

The following types of data can be exchanged:

- ☐ messages,
- ☐ fonts,
- ☐ messages + fonts,
- ☐ messages + fonts + languages,
- ☐ full printer data.

■ **Formatting external media**

- ☐ Select **FORMAT**.
- ☐ Press  to confirm.

WARNING *All the data on the medium will be lost.*

■ **Saving data from the printer to external media**

- ☐ Select **Data type** for data to be transferred.
- ☐ Select **New**.
- ☐ Give a name to the directory (max. 8 characters), then confirm.
- ☐ Select "**=>> PCMCIA**" or "**=>> USB**" or "**=>> SD**".
- ☐ Select the data to be transferred, then confirm.





External communications

NOTE *Languages cannot be transferred from the printer to external media.*

■ Transferring data from external media to the printer

- ☐ Select the data to be loaded in the printer, then confirm.
- ☐ Select "<<= **PCMCIA**" or "<<= **USB**" or "<<= **SD**".
- ☐ Press  to transfer selected data to the printer.

■ Deleting data on external media

- ☐ Select the data to be deleted, then confirm.
- ☐ Select **DELETE**.
- ☐ Press .
- ☐ You are asked to confirm that you want the data to be destroyed.





External communications

■ Input/output connections

Connections to external equipment and accessories are made via the industrial interface board, which consists of dedicated terminal connectors.

Several types of signals can be utilized, including:

- Input/Output signals for synchronization with the production line - start print (TOP), tachometer (TACHY), reverse message (INVMES), etc.,
- Serial links for external control of the printer (RS232 / RS422 interface),
- Alarm/fault outputs (dry contact relays),
- Audible alarm output,
- Message selection signals on parallel interface,
- Additional photocell input,
- Counter increment input,
- Counter initialization input,
- Others.

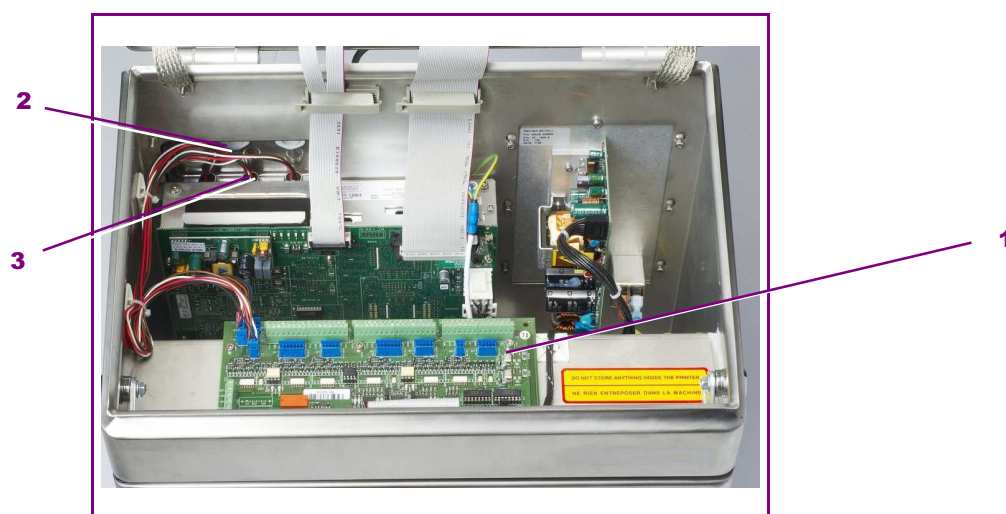
Auxiliary connections

The wiring for the signals can either be connected on:

- The industrial interface board terminal (1) with wires entering via the IP65 sealed cable gland(s) (2). Open the cabinet covers to access the board.
- or, as an option for certain signals, on IP 65 DB-25 parallel connector (3).

The glands and the connectors are located at the back of the printer.

Figure 1: View of industrial interface board





External communications

Connector identification



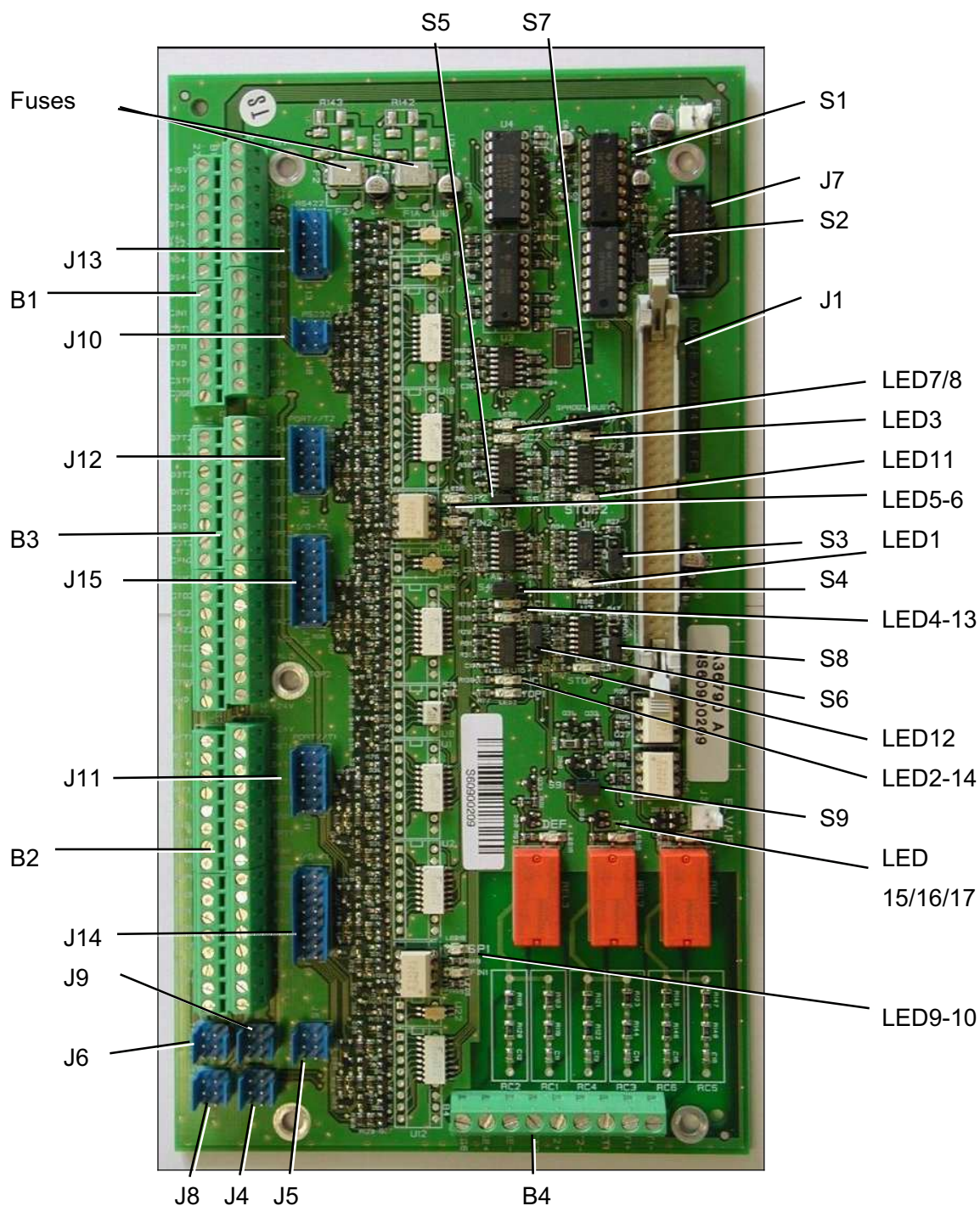
A	Connector for alarm lamp
T1	Tachometer connector 1
C1	Photocell connector 1
T2	Tachometer connector 2 (for two-head printer)
C2	Photocell connector 2 (for two-head printer)





External communications

Industrial interface board : layout



External communications



■ LED status

These LEDs provide a visual indication that specific output signals from the printer or input signals from an external device connected to the board are operating correctly.

ID	LEGEND	COMMENTS
LED1 (green)	TOP2	Signal from DTOP2 input is present (LED flashes in time with the photocell signal).
LED2 (green)	TOP1	Signal from DTOP1 input is present (LED flashes in time with the photocell signal).
LED 3 (green)	TAC2	Signal from TACHY2 input is present. (LED flashes in time with the tachometer pulses).
LED4 (green)	TAC1	Signal from TACHY1 input is present. (LED flashes in time with the tachometer pulses).
LED5 (green)	FIN2	The LED goes on when the VALFINALIMP2 signal from the printer changes to logic level 0 - i.e. 0V (active status) Indicating that counter 2 on head 2 has reached its final value.
LED6 (green)	SP2	The LED goes on when the SPROG2 signal from the printer changes to logic level 1 - i.e. +5V (active status) in SPROG2 mode (jumper S7-3). The LED goes on when the SPROG2 signal from the printer changes to logic level 0 - i.e. 0V (active status) in BUSY2 mode (jumper S7-1). In both cases, when the LED is on indicates that head 2 is printing.
LED7 (green)	RC2	Signal from the RAZC2 input is present. (LED flashes in time with the command signal).
LED8 (green)	INC2	Signal from the INCC2 input is present. (LED flashes in time with the command signal).
LED9 (green)	FIN1	The LED goes on when the VALFINALIMP1 signal from the printer changes to logic level 0 - i.e. 0V (active status). Indicating that counter 1 on head 1 has reached its final value.





External communications

LED10 (green)	SP1	The LED goes on when the SPROG1 signal from the printer changes to logic level 1 - i.e. +5V (active status) in SPROG1 mode (jumper S8-3). The LED goes on when the SPROG1 signal from the printer changes to logic level 0 - i.e. 0V (active status) in BUSY1 mode (jumper S8-1). In both cases, when the LED is on indicates that head 1 is printing,
LED11 (green)	STOP2	Signal from STOPI2 input is present. (LED flashes in time with the command signal).
LED12 (green)	STOP1	Signal from STOPI1 input is present. (LED flashes in time with the command signal).
LED13 (green)	RC1	Signal from RAZC1 input is present. (LED flashes in time with the command signal).
LED14 (green)	INC1	Signal from INCC1 input is present. (LED flashes in time with the command signal).
LED15 (green)	DEF	The LED goes on when there is a general fault on the printer. Relay REL2 is activated.
LED16 (green)	T2	The LED goes on when head 2 on the printer is ready to print. Relay REL3 is activated.
LED17 (green)	T1	The LED goes on when head 1 on the printer is ready to print. Relay REL1 is activated.

■ Fuses

500mA (resettable)



External communications



■ Jumpers and switches

Standard position			ID	LEGEND	POSITION	FUNCTION / COMMENTS
1	2		S1-1	VAL	VAL	RS422 point-to-point link (just one printer on the link).
			S1-3	VAL	not VAL	RS422 point-to-multipoint link (printer selected with VALID422).
1	2		S2_1	RXD	232	RS232 serial link mode selected
			S2_3	RXD	422	RS422 serial link mode selected.
	2	3	S3-3	TOP2	TOP2	DTOPIMP2 signal from optocoupled input DTOP2.
			S3-1	TOP2	not TOP2	DTOPIMP2 signal from input DTOP1 (when operating with two heads and a single DTOP cell)
	2	3	S4-3	TAC2	TAC2	TACHYIMP2 signal from optocoupled input TACHY2.
			S4-1	TAC2	not TAC2	TACHYIMP2 signal from input TACHY1 (when operating with two heads and a single tachometer).
			S5-3	INV2	INV2	DTOPIMP2 signal inverted.
1	2		S5-1	INV2	not INV2	DTOPIMP2 signal not inverted.
			S6-3	INV1	INV1	DTOPIMP1 signal inverted.
1	2		S6-1	INV1	not INV1	DTOPIMP1 signal not inverted.
			S7-3	SPROG2	SPROG 2	SPROGI2 signal operates in SPROG mode.
1	2		S7-1	BUSY2	BUSY2	SPROGI2 signal operates in BUSY mode.
			S8-3	SPROG1	SPROG 1	SPROGI1 signal operates in SPROG mode.
1	2		S8-1	BUSY1	BUSY1	SPROGI1 signal operates in BUSY mode.
			S9-3	T2	T2	24V alarm on J5 operates with 2 heads
1	2		S9-1	T2	not T2	24V alarm on J5 operates with one head



External communications



Signals: inputs and outputs

The four terminal blocks on the industrial interface board are arranged as follows:

- Terminal block B1: 28-pin CPU signals
- Terminal block B2: 32-pin Head 1 signals
- Terminal block B3: 32-pin Head 2 signals (on two-head printers only)
- Terminal block B4: 9-pin Alarm relay signals

Most signals are also available on the HE 14 connector.

■ Terminal block B1: Communication

Pin	HE14 connector	Legend	Signal	I/O	Comments
B1-5	J10-3	TXD	TXDEXT	O	TX RS232
B1-6	J10-4	RXD	RXDEXT	I	RX RS232
B1-7	J10-2	DTR	DTREXT	O	DTR RS232
B1-8	J10-1	DSR	DSREXT	I	DSR RS232
B1-24	J13-10	TD4+	TXD422+	O	TX RS422 -TX RS422 +
B1-23	J13-9	TD4-	TXD422-	O	TX RS422 -
B1-18	J13-4	RD4+	RXD422+	I	RX RS422 +
B1-17	J13-3	RD4-	RXD422-	I	RX RS422 -
B1-22	J13-8	DT4+	DTR422+	O	DTR RS422 +
B1-21	J13-7	DT4-	DTR422-	O	DTR RS422 -
B1-16	J13-2	DS4+	DSR422+	I	DSR RS422 +
B1-15	J13-1	DS4-	DSR422-	I	DSR RS422 -
B1-20		VAL422+	VALID422+	I	Enable RS422
B1-19		VAL422-	VALID422-	I	Enable RS422
B1-10		OT1	OUT1	O	Positive terminal not used
B1-9		COT1	COMOUT1	O	Negative terminal not used
B1-12		IN1	IN1	I	Positive terminal not used
B1-11		CIN1	COMIN1	I	Negative terminal not used
B1-13/14/25		GND	GND		
B1-26		+5V	+5V	O	
B1-27		+15V	+15V	O	
B1-28		-15V	-15V	O	

CAUTION : The +5V, +15V and -15V outputs are not fuse protected.
If using these supplies, care must be taken.





External communications

■ Terminal block B1: Alarms

Pin	Legend	Signal	I/O	Comments
B1-1	COGE	COMGENE	O	Optocoupled general alarm: negative terminal
B1-2	OGE	OPTOGENE	O	Optocoupled general alarm: positive terminal
B1-3	CSTR	COMSTART	I	Printer Stop/Start: negative terminal
B1-4	STR	START	I	Printer Stop/Start: positive terminal

■ Terminal block B2: Printhead 1

Pin	HE14 connector	Legend	Signal	I/O	Comments
B2-4	J4-5	TOP1	DTOP1	I	Head object photocell: positive terminal.
B2-3	J4-6	CTP1	COMDTOP1	I	Cell: negative terminal
B2-6		VAL1	VALIMP1	I	Head 1 cell validation input: positive terminal
B2-5		CVAL1	COMVALIMP1	I	Validation: negative terminal
B2-8	J8-5	TAC1	TACHY1	I	Head 1 encoder input: positive terminal
B2-7	J8-6	CTC1	COMTACHY1	I	Encoder: negative terminal.
B2-10	J14-4	RAZ1	RAZC1	I	Head 1 counter 1 reset to initial value.
B2-9	J14-3	CRZ1	COMRAZC1	I	
B2-12	J14-6	IC1	INCC1	I	Head 1 counter 1 value increment or decrement according to counter parameters.
B2-11	J14-5	CIC1	COMINCC1	I	
B2-14	J14-8	STO1	STOPI1	I	Stop current print job.
B2-13	J14-7	CTO1	COMSTOPI1	I	





External communications

Pin	HE14 connector	Legend	Signal	I/O	Comments
B2-16	J14-10	SPR1	SPROG1	O	Current print task including delay: positive terminal.
B2-15	J14-9	CSP1	COMSPROG1	O	Print task: negative terminal.
B2-18	J14-12	FIN1	VALFIN1	O	Indication that counter end value reached.
B2-17	J14-11	CFN1	COMVALFIN1	O	
B2-20	J14-14	OPT1	OPTOT1	O	Optocoupled head 1 alarm: positive terminal.
B2-19	J14-13	COT1	COMOPTOT1	O	Optocoupled head 1 alarm: negative terminal.
B2-24	J11-1	D0T1	D0T1	I	Head 1 parallel interface input D0: positive terminal.
B2-25	J11-2	D1T1	D1T1	I	Head 1 parallel interface input D1: positive terminal.
B2-26	J11-3	D2T1	D2T1	I	Head 1 parallel interface input D2: positive terminal.
B2-27	J11-4	D3T1	D3T1	I	Head 1 parallel interface input D3: positive terminal.
B2-28	J11-5	D4T1	D4T1	I	Head 1 parallel interface input D4: positive terminal.
B2-29	J11-6	D5T1	D5T1	I	Head 1 parallel interface input D5: positive terminal.
B2-30	J11-7	D6T1	D6T1	I	Head 1 parallel interface input D6: positive terminal.
B2-31	J11-8	D7T1	D7T1	I	Head 1 parallel interface input D7: positive terminal.
B2-23	J11-9	CDT1	COMDATA1	I	Common for head 1 parallel interface input signals: negative terminal.
B2-2/32	J11-11/ J14-16/J5-2/J4-1/J8-1	+24V	+24VT1	O	+ 24 Volts for head 1 accessories. max. available current: 300 mA.
B2-1/21/22	J11-10/J14-15/J4-2/J8-2	GND	GND		Ground (0V)





External communications

■ Terminal block B3: Printhead 2

Information and ID data same as for terminal block B2 and head 1.

Assignments for the HE14 connectors are as follows:

Connector	J9	J15	J6	J12
Assignment	Cell	Head I/Os	Tachometer	Parallel interface

■ Terminal B4: Alarms

PIN	LEGEND	SIGNAL	I/O	COMMENTS
B4-1	T1-	T1-	O	Head 1 alarm 1A dry contact inverted.
B4-2	T1+	T1+	O	Head 1 alarm 1A dry contact normal.
B4-3	CT1	COMT1	O	Head 1 alarm dry contact common.
B4-4	T2-	T2-	O	Head 2 alarm 1A dry contact inverted.
B4-5	T2+	T2+	O	Head 2 alarm 1A dry contact normal.
B4-6	CT2	COMT2	O	Head 2 alarm dry contact common.
B4-7	GE-	GENE-	O	General alarm 1A dry contact inverted.
B4-8	GE+	GENE+	O	General alarm 1A dry contact normal.
B4-9	CGE	COMGENE	O	General alarm dry contact common.

**Optocoupled ALARM outputs are also available on terminal B1:
Pins 1-2-3-4**



External communications



■ Inputs

All inputs are optocoupled.

Electrical characteristics of the optocouplers

- Operating voltage: from 5 to 24V
- Permissible current in photocoupler LED:
 - . Maximum: 25 mA
 - . Nominal: 10 mA
 - . Minimum: 3 mA
- Maximum power: 50 mW per unit
- Maximum operating frequency:
 - 200 kHz (Pulse time > 2 μ s) for tachometer input.
 - 10 kHz object sensor, parallel interface and miscellaneous signals.

Photocell

The photocell is connected to connector C1 (C2 for head 2). This connector is linked to the DTOP and COM DTOP inputs on the industrial interface board.

The sensor is activated when an object passes in front of it, and sends a signal to the printer to start printing.

The DTOP input is filtered to a minimum of 100 μ s to avoid interference. This value can be programmed.

Disable the object sensor

The VALIMP and COM VALIMP inputs are used to disable the DTOP object detection signal. These inputs can be linked to any accessory or system, which meets the specifications indicated below.

Tachometric generator

In cases where the conveyor speed is variable, it is necessary to connect a tachometric (or tacho) generator with open collector output to sequence printing operations.

The tacho is connected to connector T1 (T2 for head 2). This connector is linked to the TACHY and COM TACHY inputs on the industrial interface board.



External communications



Data transmitted via the parallel interface

The D0T(1 or 2), D1T, D2T, D3T, D4T, D5T, D6T and D7T signals on the industrial interface board are used to transmit the message numbers for each printhead. They have a single common.

Parallel transfer makes it possible to use the "Message selection" mode with the message library.

Refer to the Markem-Imaje 9040serial and parallel link manual (#Manual)for information on using this function.

Other inputs

- RAZC1 / RAZ C2:

Sets counter 1 (or counters 1 and 2, depending on software option selected).of the corresponding head back to the initial value A green LED on each input shows when the signal is on active status.

- INCC 1 / INCC 2:

Increments or decrements counter 1 for corresponding head (or counters 1 and 2, depending on software option selected). A green LED on each input shows when the signal is on active status.

- STOP 1 / STOP 2:

Stops the corresponding head from printing the current message. A green LED on each input shows when the signal is on active status.

- START / COM START:

Starts and stops the printer

. Active: Printer started.

. Inactive: Printer stopped.



External communications



■ Outputs

All outputs are optocoupled or are on relay contacts.

Electrical characteristics of the optocouplers

- Power supply voltage between signal + and signal – (common): 55 V
- Maximum output current: 20 mA
- Maximum power: 100 mW per optocoupled unit
- Maximum operating frequency: 10 KhZ

Print start signal output

The SPROG and COM SPROG outputs for each head are used to provide a print synchronization signal on a message. This capability makes it possible to obtain a signal output view of a message during a continuous printout, or to establish when message printing ends.

This message synchronization output uses the characteristics of a high-speed photocoupler with an open collector output type phototransistor.

This output also operates in BUSY mode (with the signal 180° different from the SPROG mode signal). See jumper position table.

Counter 1 final value output

The VALFINI 1 and VALFINI 2 signals show when the final value of counter 1 on the corresponding head has been reached. The green LEDs on each output show that the signal status is active.

Alarm outputs

Three alarms are available on the printer:

- General alarm (amber):

This alarm indicates a printer malfunction, which does not disable printing. It is generated to attract the user's attention so that the cause of the problem can be noticed and corrected

- Head 1 ready to print alarm:

This alarm indicates a malfunction on head 1, which disables printing. It can be linked to a flashing light unit or to an audible alarm and can also be hooked up to an interface to shut off the power supply to the conveyor and halt the production line.

External communications



The system works as follows:

- . Output not activated: the head cannot print (red)
- . Output activated: The head is ready to print (green)
- Head 2 ready to print alarm: operates in the same way as the alarm for head 1

Three different types of outputs are available for each of these alarm signals:

- Optocoupled outputs: OPTOGENE / OPTOT1 / OPTOT2 on connectors B1, B2 and B3 respectively.
- Outputs on relays: GENE / T1 / T2

Each relay output consists of a common (COMT1, COMT2, COMGE), a normally-open dry contact (T1-, T2-, GENE-) and a normally-closed dry contact (T1+, T2+, GENE+) .
Maximum specifications for these contacts are:

- 1A rms current at rms voltage of max. 24V.

There is an RC filter between all contacts and their respective common to limit any disturbance caused by a load connected to them during switching operations. Signal connections are made on terminal block B4.

Green LEDs are used to display "General fault" and "Head ready to print" status.

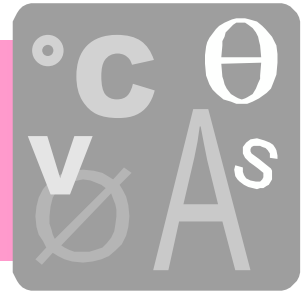
- Outputs on connector J15 for connecting an alarm on socket A at the back of the printer: GREEN / AMBER / RED.

■ Serial links

The printer can be controlled via an RS232 or RS422 serial link. Full information on configuring these links and the communication protocol used is given in the Markem-Imaje 9040 serial and parallel link manual (#Manual).

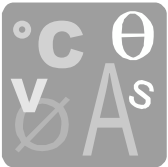


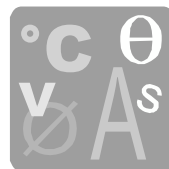




Technical Specifications

Technical Specifications





Technical Specifications

Physical characteristics

■ Dimensions

Control cabinet: 927.19 mm X 460 mm X 389.25 mm (36.504" X 18.11" X 15.325")

Single jet and two-jet printhead: 225 mm X 44.5 mm X 47.5 mm (8.8" X 1.7" X 1.9")

■ Weight

Control cabinet: 40 kg (88.2 lbs)

Head/umbilical assembly: 3 kg (6.6 lbs)

■ Capacities

Tanks : Total volume: 2 liters (3.52 pints) - Working : 1 liter (1.76 pints)

Installation details

■ Working position

Control cabinet: vertical

Printhead: vertical or horizontal

■ Maximum height differential between head and control cabinet

± 2 meters (± 6.56 ft)

■ Distance between head and control cabinet

3 meters (9.8 ft), 5 m (16.4 ft) and 8 m (26.2 ft) depending on type of machine and options.

■ Head-object distance

G head: 10 mm (0.39") or 30 mm (1.18") depending on font used

M head: 8 mm (0.32") or 20 mm (0.79") depending on font used

P head: 6 mm (0.24")

Power supply

■ Electricity

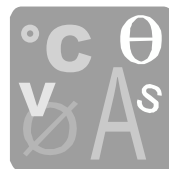
100 V - 240 V AC - Frequency: 50 to 60 Hz

Consumption: Depends on model (see manufacturer's nameplate at the back of the printer)

■ Compressed air

Pressure: 5 to 8 bar (72 to 116 psi)





Technical Specifications

Operating environment

■ Temperature

0°C to +50°C (32°F to 122°F) depending on ink (see ink technical data sheet)

■ Humidity

10 to 90%

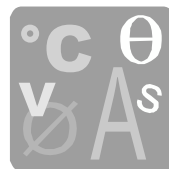
Normal accessories

Head stand
Object sensor
Tachometric generator
External alarm (visual or audible)
Head protector
Trolley
Traversing head unit

Main operating characteristics

Objects counted individually or in batches
Full programmable time and date stamping facility
Message library
Logo printing
Special characters: Chimney characters, DIN transversal and longitudinal characters
Non-doubled printing for same message
Programmable print delay times
Control via operator interface or via any system with a RS232 or RS422 serial interface
Automatic printer status diagnostics
Automatic ink viscosity regulation
Automatic nozzle unclogging procedure
Automatic printer drain and flush function
Automatic head flush function (depending on configuration)
Pressurized printhead(s) (option)





Technical Specifications

Performance

■ Printing

In all positions on any substrate

Up to 2,000 characters per message per head

1 to 4 lines per jet

1 to 2 jets per printer (depending on model)

1 or 2 heads per printer (depending on model)

Character height depending on head type and options (contact Markem-Imaje)

Choice of 5, 7, 9, 11, 16 and 24-point character fonts

Ability to print characters and graphic symbols of all types.

Symbol/logo creation capability

Alphabets handled: Arabic, Norwegian, Swedish, Spanish, Greek, Cyrillic and Hebrew

Reverse character reading and printing

■ Max. speeds

G head: up to 5.58 m/s (1,098 ft/min), depending on font used

M head: up to 3.7 m/s (728 ft/min), depending on font used

P head: up to 1.79 ms (352 ft/min)

Compliance with standards and certifications

■ Certifications

See manufacturer's nameplate at the back of the printer

■ CE conformity

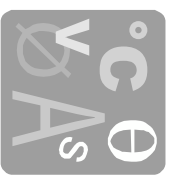
Declaration of CE conformity with European machine EMC directives.

Max noise level

< 60 dbA

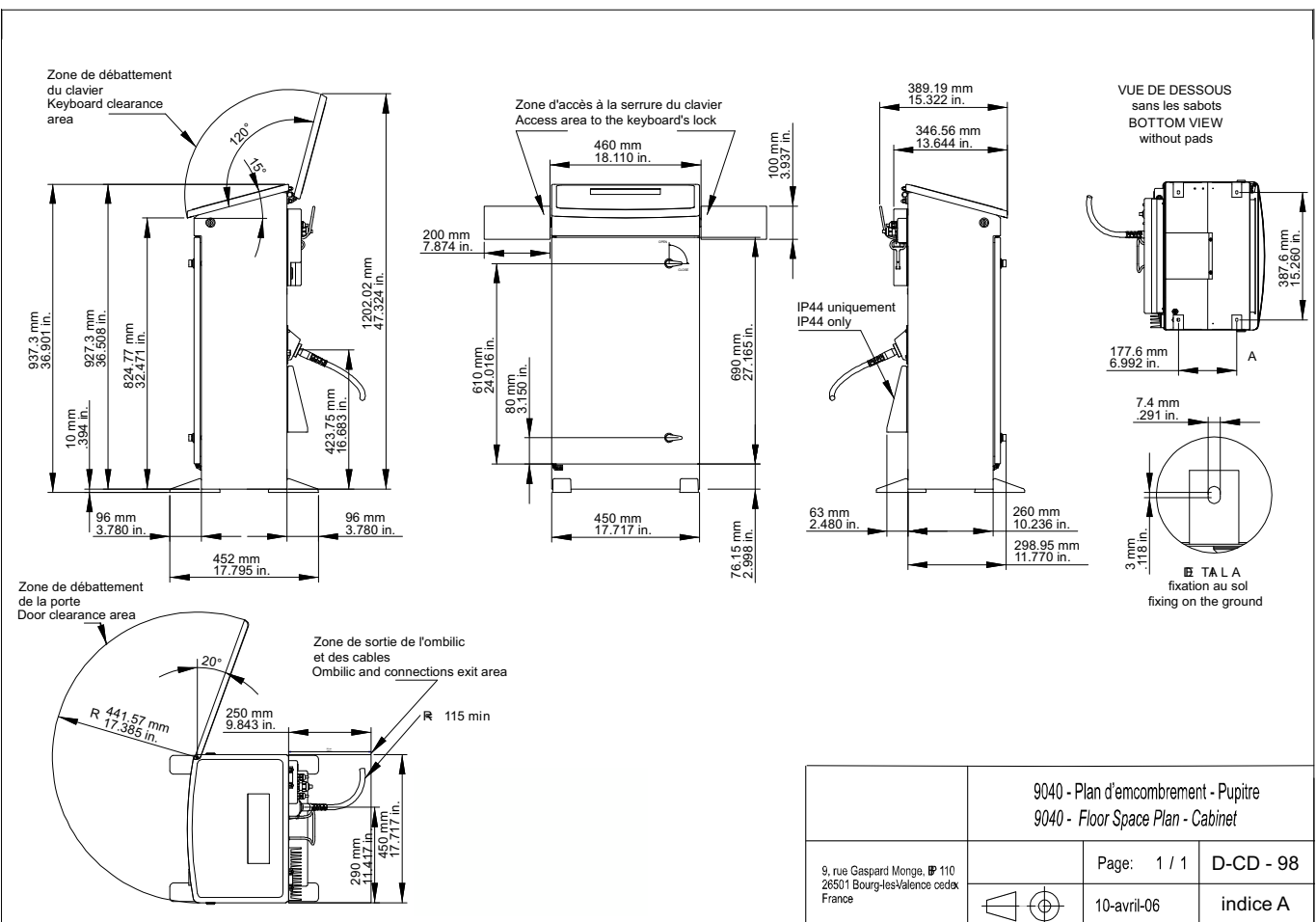


Technical Specifications

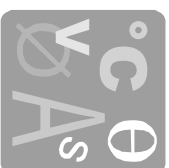


Overall dimensions

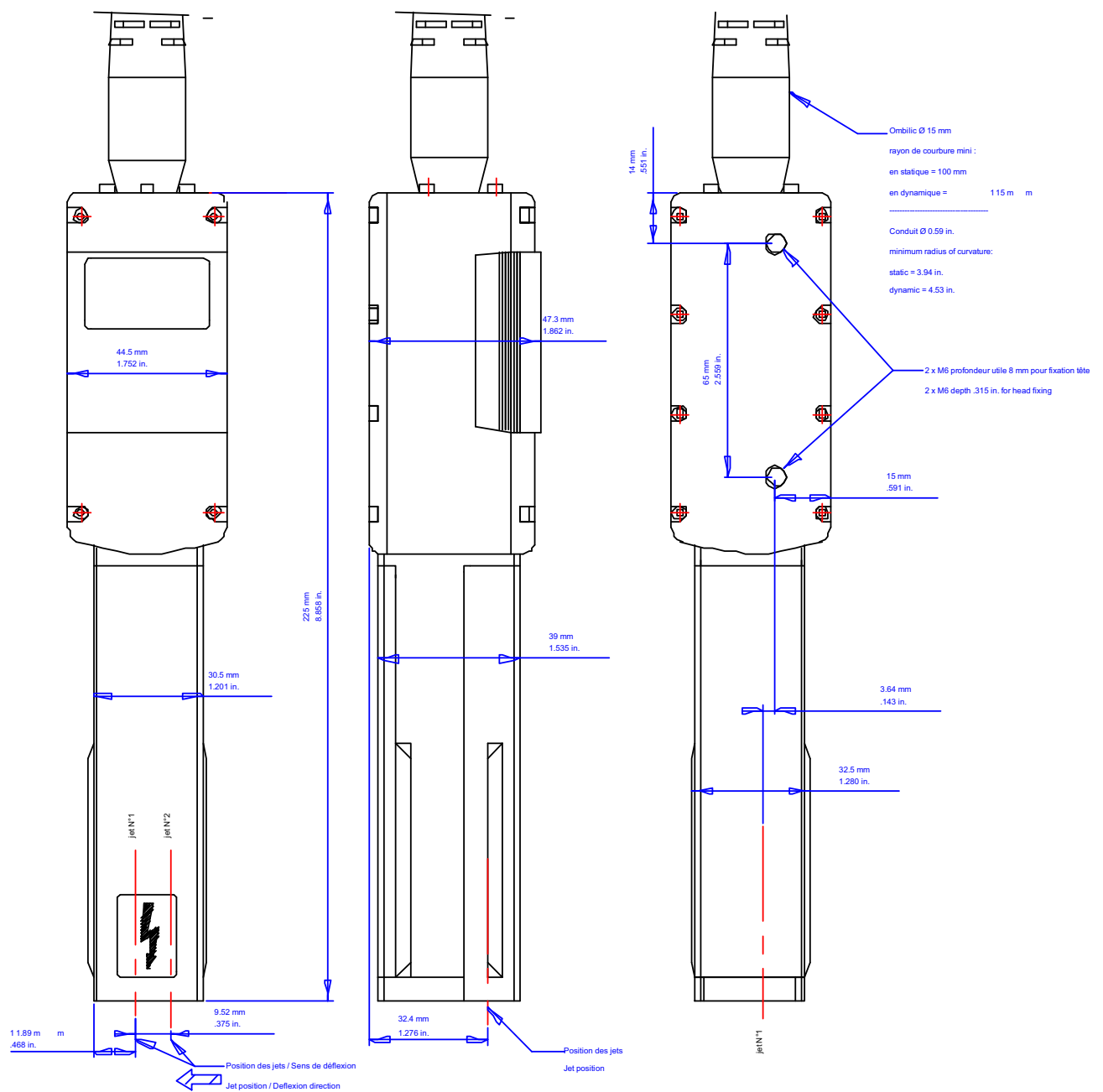
■ Cabinet



Technical Specifications

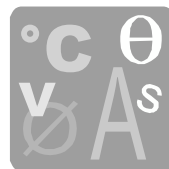


■ Right head – straight umbilical fitting



A diagram of a 4-way rotary switch. The switch is shown in a perspective view, with a central shaft and four output terminals. The terminals are labeled with angles: 0°, 90°, 180°, and 270°. A red line indicates the 0° position. A blue line indicates the 90° position. A blue arrow points to the 270° position. The switch is mounted on a rectangular base.



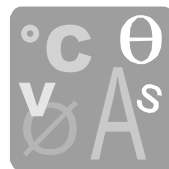


Technical Specifications

List of fonts

Numbers	Names	Formats
201	ARA 07143	7X6
202	ARA 07BA	7X6
210	ARA 16143	16X12
204	ARA 16BA	16X12
205	ARA 24BA	24X21
208	ARA 24143	24X21
66	CYR 07106	7X6
81	CYR 11107	11X8
68	CYR 16107	16X12
69	GRE 07116	7X6
71	GRE 16117	16X12
77	GRE 24117	24X21
86	HEB 05099	5x6
72	HEB 07099	7x6
74	HEB 16099	16X12
78	HEB 24099	24X21
58	SCI 05084	5x6
60	SCI 07119	7x6
62	SCI 16119	16x12
83	SIN 05116	5x6
52	SIN 07118	7x6
79	SIN 09110	9x6
54	SIN 11118	11X8
56	SIN 16119	16X12
57	SIN 24058	24X21
146	0C16 ITF	16X12
253	PARAL	
254	DAMIER	
255	J1000	





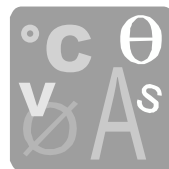
Technical Specifications

List of algorithms

■ G head

Type	Dots	Speed (m/s)	Algorithm name
Quality	5	1.86	093G10_05_01_28_12
	2X5	0.92	094G10_2X5_1_28_24
	3x5	0.558	212G10_17_01_28_40
	4x5	0.37	012G10_24_01_28_60
	7	1.39	004G10_07_01_28_16
	2X7	0.65	096G10_2X7_1_28_34
	3x7	0.37	012G10_24_01_28_60
	9	1.116	019G10_09_01_28_20
	2X9	0.43	097G10_2X9_1_28_52
	11	0.93	020G10_11_01_28_24
	2x11	0.37	012G10_24_01_28_60
	16	0.558	005G10_16_01_28_40
	24	0.37	012G10_24_01_28_60
High quality	7	0.97	013G30_07_01_28_23
	2x7	0.39	014G30_16_01_28_57
	16	0.39	014G30_16_01_28_57
	24	0.37	051G30_24_01_28_60
High speed	5	5.58	032G10_05_01_28_04
	5	4.46	001G10_05_01_28_05
	2x5	2.02	048G10_2x5_1_28_11
	3x5	1.39	030G10_3x5_1_28_16
	4x5	0.93	041G10_4x5_1_28_24
	7	3.72	031G10_07_01_28_06
	7	3.18	002G10_07_01_28_07
	2x7	1.48	047G10_2x7_1_28_15
	2X7	1.395	099G10_2X7_1_25_16
	3x7	1.01	040G10_3x7_1_28_22
	4x7	0.6	050G10_4x7_1_28_37
	9	2.23	046G10_09_01_28_10
	2x9	1.116	086G10_2x9_1_28_20
	11	1.86	011G10_11_01_28_12
	2x11	0.79	043G10_24_01_28_28
	16	1.31	003G10_16_01_28_17
	18	1.174	208G10_18_01_28_19
	20	0.89	216G10_20_01_28_25
	24	0.79	043G10_24_01_28_28
Barcode	28	0.372	998EAN_28_01_28_60



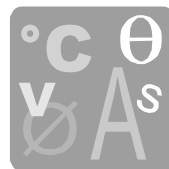


Technical Specifications

■ M head

Type	Dots	Speed (m/s)	Algorithm name
Quality	5	1.68	061M08_05_01_45_11
	2X5	0.529	200M08_2X5_1_45_35
	3x5	0.349	227M08_17_01_45_53
	4x5	0.237	016M08_24_01_45_78
	7	0.805	008M08_07_01_45_23
	2X7	0.394	201M08_2X7_1_45_47
	3x7	0.237	016M08_24_01_45_78
	9	0.638	021M08_09_01_45_29
	2x9	0.237	016M08_24_01_45_78
	11	0.529	022M08_11_01_45_35
	2x11	0.237	016M08_24_01_45_78
	16	0.37	009M08_16_01_45_50
	24	0.237	016M08_24_01_45_78
High quality	7	0.578	017M20_07_01_45_32
	2x7	0.237	023M20_24_01_45_78
	11	0.385	018M20_11_01_45_48
	24	0.237	023M20_24_01_45_78
High speed	5	3.7	045M08_05_01_28_05
	5	3.7	042M08_05_01_45_05
	5	3.08	006M08_05_01_45_06
	2x5	1.42	049M08_2x5_1_28_13
	11	1.42	015M08_11_01_45_13
	3x5	0.925	035M08_3x5_1_45_20
	4x5	0.71	037M08_4x5_1_45_26
	7	3.72	044M08_07_01_28_08
	7	2.64	033M08_07_01_45_07
	7	2.31	007M08_07_01_45_08
	16	0.974	010M08_16_01_45_19
	3x7	0.71	036M08_3x7_1_45_26
	4x7	0.377	053M08_4x7_1_45_49
	9	1.42	015M08_11_01_45_13
	2x9	0.597	038M08_24_01_45_31
	11	1.42	015M08_11_01_45_13
	2x11	0.597	038M08_24_01_45_31
	16	0.974	010M08_16_01_45_19
	18	0.925	214M08_18_01_45_20
	24	0.597	038M08_24_01_45_31
Egg	5	4.25	077M08_05_01_28_07
	4	4.25	078M08_04_07_28_07
	2X5	2.29	203M08_2X5_1_28_13
	7	4.25	079M08_07_01_28_07
	6	2.67	080M08_06_10_28_11
	2X7	1.75	204M08_2X7_1_28_17
	11	1.84	081M08_11_01_28_16
	16	1.28	082M08_16_01_28_23





Technical Specifications

Type	Dots	Speed (m/s)	Algorithm name
Beverage	7	2.74	087M14_07_02_30_10
	2X7	1.75	204M08_2X7_1_28_17
Barcode	24	0.264	995EAN_24_01_45_70

■ P head

Type	Dots	Speed (m/s)	Algorithm name
Quality	5	1.05	088P06_05_01_70_17
	2x5	0.51	091P06_11_01_70_35
	3x5	0.228	072P06_24_01_70_78
	4x5	0.228	072P06_24_01_70_78
	7	0.776	089P06_07_01_70_23
	2x7	0.357	092P06_16_01_70_50
	3x7	0.228	072P06_24_01_70_78
	9	0.615	090P06_09_01_70_29
	2x9	0.228	072P06_24_01_70_78
	11	0.51	091P06_11_01_70_35
	2x11	0.228	072P06_24_01_70_78
	16	0.357	092P06_16_01_70_50
	24	0.228	072P06_24_01_70_78
	24	0.198	217P06_24_01_70_90
High speed	5	1.79	062P06_05_01_70_10
	2x5	0.89	067P06_2x5_1_70_20
	3x5	0.59	068P06_3x5_1_70_30
	4x5	0.45	069P06_4x5_1_70_40
	7	1.28	063P06_07_01_70_14
	2x7	0.63	070P06_2x7_1_70_28
	3x7	0.42	071P06_3x7_1_70_42
	9	0.99	064P06_09_01_70_18
	2x9	0.228	072P06_24_01_70_78
	11	0.81	065P06_11_01_70_22
	2x11	0.228	072P06_24_01_70_78
	16	0.56	066P06_16_01_70_32
	24	0.228	072P06_24_01_70_78
	24	0.198	217P06_24_01_70_90
Barcode	24	0.255	EAN993_24_01_75_70





Consumables



Consumables





■ Definition

The term consumables refer to Markem-Imaje products which are consumed in the printing process or which are used to ensure that the printer operates correctly. Consumables include:

■ Ink

Used for marking.

The ink formula includes ingredients to provide:

- stability when stored in the container (up to use-by date) and when in the printer,
- good marking performance (adhesion to identified substrates and resistance to specific identified constraints).
 - The most reliable printer performance as they are engineered to meet our exacting specifications.

■ Additive

Used to adjust the viscosity of the ink.

The composition of the additive is exactly matched to the requirements of the ink being used.

Use of lower grade additives may cause performance issues with your printer

■ Cleaning solution

Used for printer maintenance (head cleaning, etc.).

The composition of the additive is compatible with the ink and additive used.

■ Flushing liquid

May be required for specific configurations.

The composition of the fluid is suitable for a variety of maintenance tasks.

■ Anti-clogging liquid

May be required for specific configurations.

■ Units of sale

Markem-Imaje offers packs of four or six units, depending on the type of ink or additive, as well as starter kits containing ink and additive.



Labels



Labels perform three functions.

- They identify the supplier and give their supplier's contact details (1).
- They give the user information about the product itself (2):
 - . Part number,
 - . Manufacturing batch number: This number should be given if you contact our technical support service,
 - . Use before end: Date when guarantee on original quality ends.
- They give the user information about the risks associated with the ink as defined in accordance with European directive 91/155/EC (amended) and international standard ISO 11014-1 (3).

■ Consumables and applications

The customer bears sole responsibility for the qualification of the application in question. Qualification of an application covers the ink, inkjet hardware, and the type of substrates along with the manufacturing process, the marking specifications and so on. Markem-Imaje can manufacture a wide range of printers and inks, which are available to produce marking samples for our existing and future customers.



■ Consumables and printers

Ink usage specifications

Users must be in possession of these specifications: they can be obtained from our sales agencies upon request.

The sheet provides the user with information on operating parameters (such as viscosity, jet speed, etc.) and on specific printing characteristics (including print speed, head/object distance and so on), which is applicable to your printer's configuration (nozzle size, number of nozzles, etc.) and the ink you have selected. The sheet also gives environmental information concerning the storage and use of a particular ink.

Consumption

You should be aware that ink consumption for a given period depends on the number of characters printed per object, the number of objects marked during the period, the font used (matrix, bolderization) and the diameter of the nozzle.

Additive consumption to a large extent depends on printer service time and ambient temperature, as well as on the print head configuration.

■ Consumables and safety

The use of our consumables presupposes some knowledge of the physical and chemical properties associated with them, and familiarity with the safety instructions applicable for storage, handling and use of these products.

All of this data is contained on the material safety data sheet, which is available on request from our sales agencies or at our website; www.markem-imaje.com.

Read these sheets before attempting to start the application.

Note:

The presentation and content of the Material Safety Data Sheets comply with European Directive 91/155/EC (amended) and with international standard ISO 11014-1.



■ These sheets provide full information regarding:

- ☐ Identification of the preparation and the manufacturer,
- ☐ Composition/information on ingredients contributing to the hazard,
- ☐ Identification of hazards,
- ☐ First aid measures,
- ☐ Fire-fighting measures,
- ☐ Accidental release measures,
- ☐ Handling and storage,
- ☐ Exposure controls/personal protection,
- ☐ Physical and chemical properties,
- ☐ Stability and reactivity,
- ☐ Toxicological information,
- ☐ Ecological information,
- ☐ Disposal considerations,
- ☐ Transport information,
- ☐ Regulatory information,
- ☐ Other information.

■ For:

- ☐ Operators, technicians and warehouse personnel,
- ☐ Customer's Health & Safety Committee,
- ☐ Occupational health officer,
- ☐ Fire services,
- ☐ Carriers and customs authorities.

■ Consumables: Warranties and liabilities

Our consumables have been specially designed for use with Markem-Imaje printers to give optimum results in terms of ease of use and consumption.

Use of consumables other than those offered by Markem-Imaje renders the hardware warranty void, and no claims for any deterioration in performance, which could result in production, stoppages or losses will be accepted.





Revisions

■ Markem-Imaje 9040 User Manual

Revisions to this manual

- Revision index A corresponds to the first edition of this manual.
- The revision index is changed every time the document is revised.

Issue date	Document revision index	Software index
09/2006	A	J05/M05
11/2006	A1	J05/M05
11/2007	B	J46/M46
06/2008	C	J46/M46

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Edition anglaise



